Carol S. Haworth

DOCUMENTATION OF SABIR 2.

TA7
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v.1

Library
U. S. Naval Postgraduate School
Monterey, California

U. S. Naval Postgraduate School.
Research paper.

DOCUMENTATION OF SABIR2

by

Carol S. Haworth
Mathematician, Computer Facility

Volume I

RESEARCH PAPER No. 44

April 1964

Folio
TA 7.
U6
no. 14
v. 1

Library
U. S. Naval Postgraduate School
Monterey, California

SABIR2

(Semi-Automatic Bibliographic Information Retrieval, Second Version)

DOCUMENTATION

by

Carol S. Haworth
Mathematician, Computer Facility

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Monterey, California

RESEARCH PAPER NO. 4-

TA7
.46
no 44
v.1

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PREFACE

SABIR2, the program recently completed by Mrs. Haworth, has facilitated a vitally-important service that is now available to patrons of the U. S. Naval Postgraduate School Library. This service, a sophisticated machine information storage and retrieval system, provides one of the few feasible solutions to a problem that plagues scientific communities throughout the United States. The problem can best be described as the determination of the modus operandi by which information on a specific subject or a group of subjects can be most easily, accurately, and expeditiously obtained. The simplicity of this definition is perhaps misleading, for today an ever-increasing volume of technical documents issued by industrial companies and federal facilities has made information retrieval a matter of critical concern to scientists, librarians, and information specialists. Most certainly, the Postgraduate School Library has felt the impact generated by the current population explosion of scientific and technical publications.

In terms of its practical application, Mrs. Haworth's program now makes it possible for the Technical Reports and Classified Material Section of the Library to provide a bibliography of technical reports suited to almost any particular research requirement. The requests of students and faculty members for such lists will be processed on input paper tape which will be taken to the Computer Facility. Through the utilization of the CDC 1604, thousands of records stored on magnetic tape files will be searched in a matter of minutes. The printed output will itemize those

documents selected during the course of a search run. The itemization will be in bibliographical format, citing corporate authors (sources), titles, personal authors, dates and other related data, and, in addition, many citations will also carry abstracts. Fifty searches may be run simultaneously with no additional time cost. Since the demands upon the Technical Reports Section grow heavier each year, the value of this particular program is evident.

The desirability of an automated information retrieval system was recognized by the Librarian, Professor George R. Luckett, during the nineteen-fifties. At that time the only available subject approach to the Library's technical documents was through the medium of the coordinate index, a manual tool that was both impractical and unwieldy when used for the control of a large number of documents. It was soon apparent that the ultimate answer could be found only through the utilization of automation.

In 1960, Lt. Martin A. Wildberger, a student in the Department of Mathematics and Mechanics, studied the problem of subject access to the Library's technical documents and subsequently wrote SABIRS, the foundation program, as the subject of his Master's Thesis. The service that it made possible was initiated in August, 1961. SABIRS was a valuable first step as it eliminated absolute dependence upon the coordinate index and effected a transition from manual to automated searching. It was limited, however, to the extent that a search output revealed only the accession (control) numbers of the items cited. Consequently, patrons were compelled to check each number against a corresponding number in the catalog shelf list. This

proved to be in many cases a tedious step which detracted from the usefulness of the system. Therefore, in April, 1963, the Computer Facility was requested to provide the programming effort necessary to add abstracts or bibliographic information to the search output and to arrange this output so that each requestor's bibliography was separate from the others found in the same run. These goals have now been elegantly attained. In the process Mrs. Haworth has recorded the entire system and has added various other improvements which will be described in the text of her report.

During the six months that followed the implementation of SABIRS a total of 150 searches were run. Utilization of the system has increased to the point where 2,000 searches per year are now being made. With the introduction of SABIR2, it is anticipated that within eighteen months the number of searches will average 5,000 annually.

Paul Spinks
Associate Librarian
Associate Professor

INTRODUCTION

The background material necessary to a full understanding of the information retrieval system described in this paper is given in the Wildberger Thesis (Reference 1). Pages 38-40 of that thesis explain the problem to be solved. Briefly, the Technical Reports Section of the U. S. Naval Postgraduate School Library contains more than 150,000 items and grows at the rate of about 5,000 per year. The items, varying in size from thin pamphlets to folios, are stored in cabinets, shelved individually, or packed in shelf boxes. More than 60,000 are classified confidential or higher and must be stored according to the appropriate regulations. The reports contain scientific or engineering information and originate from government agencies, academic institutions or private companies. A method was needed to enable students and research workers to retrieve the particular information they want from this mass of material.

Pages 41-45 of Reference 1 explain that under SABIRS, requestors specified the sort of technical reports desired by "uniterms" with or without originating agency and/or range of publication dates. A "uniterm" is a descriptive term denoting a technical subject. Each permitted uniterm and each originator has been assigned a numerical code. This same scheme is used in SABIR2.

The program searches the document files of reports to find those which satisfy the requests. Then the resulting information is output in an intelligible format. Various auxiliary programs are necessary to do this basic search task. The most important of these is the update program which

deletes documents from the appropriate tape files when items are discarded in the Library and adds information to the files when items are added to the Library. All of the major and auxiliary programs will be explained in detail in this paper.

In converting from SABIRS to SABIR2, the first change desired by the Library was the inclusion of abstract or bibliographic information in the system. To accomplish this a file of that data was generated by using the paper tapes derived as a by-product when library personnel typed bibliographic cards on a flexowriter. The data on these tapes were edited and written on magnetic tape in ascending order by accession number.

The coded document file already in existence was also reordered by ascending accession number. With both files ordered the same way, bibliographic information would be easily available. It would also be possible to include checking procedures to be certain all information was present when needed. Finally by having two files on different channels all tape input-output could be overlapped with considerable saving in machine time.

The program in its final form can be operated on multi-reel files, though at present each file is less than one reel in length. Paper tape requests for search are accepted in the same format as previously. Results are sorted so that each requestors answers are printed separately.

The update program accepts paper tape input requests for adding-to, replacing or deleting-from both files. The information necessary for updating the coded document file is in the same format as before. The information necessary to update the new bibliographic file can be any

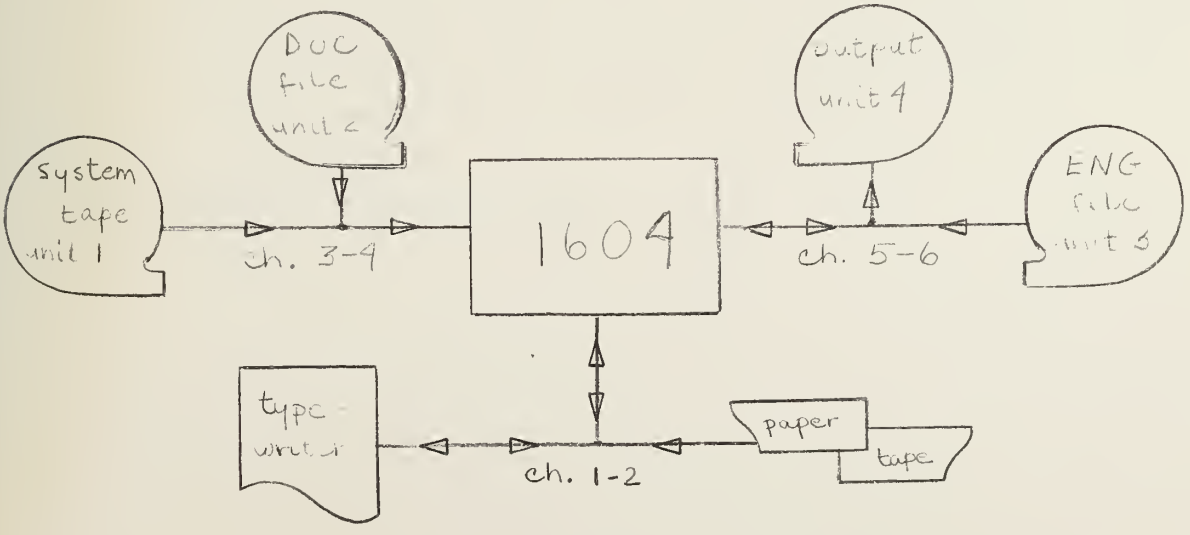
alphanumeric description identified by an accession number and not exceeding 600 characters.

The system also contains a small Master Control Program which governs reading in the programs to be executed. The details of each of these subprograms are discussed below. Familiarity with the Control Data Corporation 1604 Computer is assumed. (See Reference 2)

The Master Control Portion: Communicates with machine operator to get date and option whether to search or update. It reads in the appropriate program, which is then executed.

The SEARCH Portion: The SEARCH program accepts paper tape (a flexowriter or synchrotape) input on which are punched the requests (an identifier followed by uniterms or keywords). After reading in all the requests (up to 50), the program searches the DOC magnetic tapes for bulletins which have all the desired uniterms (Reference 1, page 55). When a document satisfies a request, its bibliography or abstract is found on the ENG tapes and printed as output for the request.

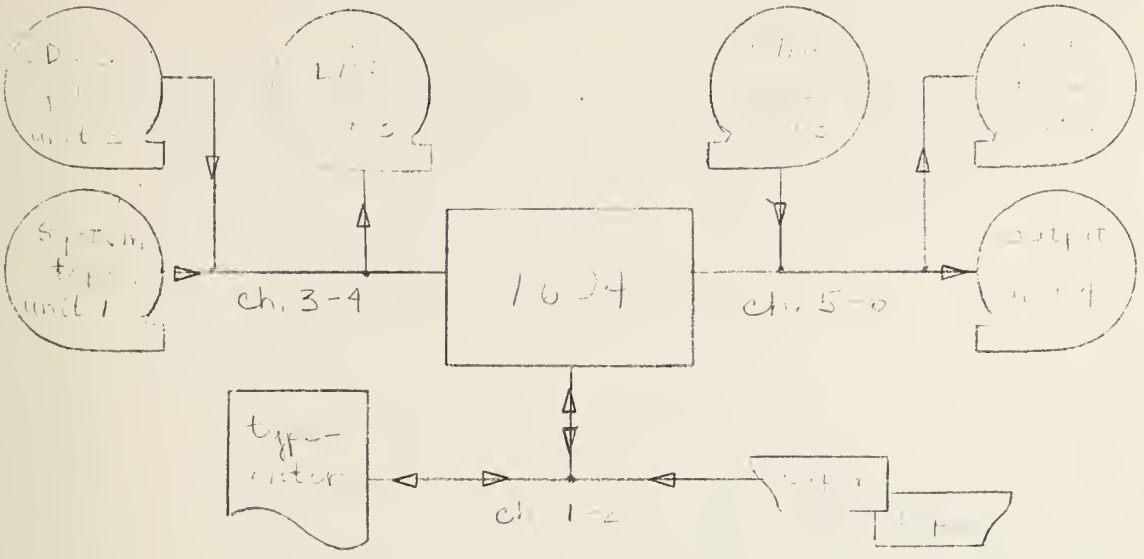
A system schematic of SEARCH portion:



1. System tape (unit 1, channel 3): contains a control program, the search program and the update program (see Appendix 3).
2. DOC File (unit 2, channel 3): contains document number (accession number) followed by source, date and uniterm codes. These are arranged in ascending order of document number (see Appendix 3).
3. ENGlish title file (unit 3, channel 5): contains in the first word, the number of words in the record, the rest of the record is the bibliography card information or an abstract. All records are in ascending order of document number. (Maximum of 83 words per records). (See Appendix 3).
4. Output tape (unit 4, channel 6). contains
   a. List of requests on first page.
   b. Followed by pages of output for each person. First line of each page has person identifier and page number of output with respect to them.

The UPDATE Portion: The UPDATE portion reads in the paper tapes which contain update information for the DOC tapes or ENG tapes or information to be deleted from both. The program then reads in the old DOC and ENG tapes creating new updated versions with all documents arranged in ascending order. The print output tape will contain a list of all additions and deletions for the run.

A system schematic of UPDATE portion:



1. System tape (unit 1, channel 3): same as for search.

2. DOC tape (unit 2, channel 3): the old version of DOC which is to be updated (see Appendix 3).

3. New ENG tape (unit 3, channel 4): the new updated ENG tape at the end of the run.

4. ENG tape (unit 3, channel 5): the old ENG which is to be updated (see Appendix 3).

5. New DOC tape (unit 2, Channel 6): New updated DOC tape.

6. Output (unit 4, channel 6): list of additions and deletions made.

I. Writing the system tape (see Appendix 3 under system tape)

A. Place the system deck on magnetic tape on unit 1, Ch. 5-6

(use 1401 program A1:CT 01)

B. Place system tape on unit 1, Ch. 3-4

C. Bootstrap

10 in A reg. right

200 00005 in FC and EA --- STEP

740 52011 in FC and EA --- STEP

745 00000 in FC and EA --- STEP

--- CLEAR

put 00006 in PAR --- START

Computer will halt with 760 77733 in FC and EA and 77733 in PAR

D. A new SABIR2 system tape will be on unit 1, Ch. 3-4

E. Error stops:

PAR	REASON
77563	Checksum error--press start to try again.
77601	Tape read error unit 1, Ch. 5. Press start to retry.
77747	Tape write error unit 1, Ch. 4. Press start to retry.

II. Running the SABIR2 System for SEARCHING

A. Loading the system tape

1. Mount the SABIR2 system tape on unit 1, Ch. 3-4.

2. Bootstrap the system tape as follows

CLEAR and STEP

Place 00270 in A Reg. right

200 00003 in FC and EA --- STEP

740 32011 in FC and EA --- STEP

743 00030 in FC and EA --- STEP

--- CLEAR

Place 00030 in PAR --- START

(this reads in MC prog.)

B. Mount tapes

1. Current ENG 01 on unit 3, Ch. 5-6

2. Current DOC 01 on unit 2, Ch. 3-4

3. Scratch tape for output on unit 4, Ch. 5-6

C. Communicate with MC (Master Control)

1. The program will type:

"date;"

2. Operator should type in

mm/dd/yy

where mm = month

dd = day

yy = year

a. If the operator types an illegal character the program will type "illegal" and expect the operator to start typing again.

b. If the operator wishes to restart, he should type CR (carriage return) and the program will be ready to accept new typed input, disregarding the old.

3. The program will type:

"option;"

4. Operator should type in

search.

a. Error procedures of 2a. and b. above apply here also.

5. The computer will halt with 00065 in the PAR, ready to execute the SEARCH when START is pressed.

D. Reading in the Search Inputs

1. Set jump key 1 off

2. Set paper tape reader for 7th level tapes

3. Place request paper tape in paper tape reader in character mode. If it is the last paper tape to be read in, set jump key 1 on (up), press START.

4. After each paper tape, except the last, has been read in, the computer will halt with ~~04147~~ 34154 in the PAR.

5. Put the next paper tape in the reader, set jump key 1 on if last tape and press START.

6. After the last paper tape has been read or 50 requests assembled, the SEARCH will commence.

E. Messages on typewriter during Search Input phase

MESSAGE	MEANING + ACTION
MODE	Means the paper tape reader is not in the character mode. Put it in the character mode and press START.
50 REQST	Fifty input requests have been read in, no more can be handled this run. Leave the paper tape reader as it is. At the end of this search the program will read in the rest of the requests and do another search.

F. During the Search

1. Both tape 2, Ch. 3 and tape 3, Ch. 5 will be read and at intervals answers will be placed on tape 4, Ch. 6.
2. At the end the search run if there are more input tapes (i.e. search was started by 50 REQST), "MORE SEARCHING IS NECESSARY, MOUNT DOC01 AND ENG01, PRESS START" will type.
   a. Ready DOC01 and ENG01 on units 2, Ch. 3 and 3, Ch. 5, respectively, and press START.
   b. The program will continue from step D4.
3. If there is no more searching to be done, "END OF SEARCH." is typed and control goes to MC program.

G. Terminating the search or starting another.

1. MC types "option;" and the operator may do one of the following

   a. Do more searching and precede as in C3.

   b. Initiate an UPDATE and procede as described in UPDATE operating instructions, III C3.

   c. Terminate the run by typing

      END.

      which will cause "END OF TAPE" to be written on the output tape 8, unit 4, Ch. 5-6 and will rewind it.

H. Typewriter messages during actual searching

MESSAGE	MEANING + ACTION
TAPE n	Tape error in reading or writing on tape unit n. Press start to retry reading or writing, except for TAPE 8 which procedes without correcting.
NO REQUESTS	During the input phase, no correct requests were sensed. The search will be terminated.
IF NO MORE DOC PUT SW 3 UP, OTHERWISE MOUNT TP DOC xx ON UNIT 2 CH. 3. START.	The end of the present DOC tape has been reached. If there is a current DOC TP #xx, mount it on unit 2, Ch. 3; set jump key 3 down and press start. If there is no DOC xx, put jump key 3 up and press start.

MESSAGE	MEANING + ACTION
IF NO MORE ENG PUT SW 3 UP, OTHERWISE MOUNT TP ENG xx ON UNIT 3 CH. 5. START.	The end of the present ENG tape has been reached. If there is a current ENG xx tape, mount it on unit 3, Ch. 5, jump key 3 down, press START. If there is no ENG xx, set jump key 3 up and press START.
M. ERROR	Incorrectable machine or tape error. Run will be terminated. Examine labels on DOC and ENG tapes -- if they are okay the machine is in error.
TOO MANY	Over 99 ENG or DOC tapes, too many. Run terminated.

III. Running the SABIR2 System for UPDATING

A. Loading the system tape

1. Mount the SABIR2 system tape on unit 1, Ch. 3-4.
2. Bootstrap the system tape as follows

CLEAR and STEP

Place 00270 in A Reg. right

200 00003 in FC and EA --- STEP

740 32011 in FC and EA --- STEP

743 00030 in FC and EA --- STEP

--- CLEAR

place 00030 in PAR --- START

(This reads in MC program).

B. Mount tapes

1. Current ENG01 on unit 3, Ch. 5-6
2. Current DOC01 on unit 2, Ch. 3-4
3. Free ENG01 on unit 3, Ch. 3-4
4. Free DOC01 on unit 2, Ch. 5-6
5. Scratch tape for output on unit 4, Ch. 5-6.

C. Communicate with MC (Master Control)

1. The program will type:

"date;"

2. Operator should type in

mm/dd/yy

where mm = month

dd = day

yy = year

a. In case of trouble or error see section II C 2a. and b. under operating SEARCH.

3. The program will type:

"option,"

4. Operator should type

UPDATE

a. Typing error procedure is the same as section II C 2a. and b.

5. The computer will halt with 00102 in the PAR, ready to start the UPDATE when START is pressed.

D. Reading UPDATE inputs on paper tape

1. When the last paper tape to be read is in the paper tape reader, put jump key 1 up. Otherwise it must be down.

2. Place the paper tape in the tape reader (7th level mode) in character mode. If it is to update ENG tapes, put jump key 2 up; if it is a delete or to update DOC tape, put jump key 2 down. Press START.

3. After each input tape, except the last, the computer will halt with ~~01034~~ 01042 in the PAR.

4. Procede from step D2.

5. After the last tape or 250 inputs of one type, the actual updating will begin (see section F).

E. Messages on typewriter during UPDATE input phase.

MESSAGE	MEANING + ACTION
MODE	The paper tape reader is not in the character mode. Put it in the character mode and press START.
FULL	One of the input buffers is full i.e. 250 deletes, DOC updates or ENG updates have been read in. The program will now start updating. In order to process the rest of the paper tape in the reader, it must be read on another update run.

F. During the Update

1. If there are ENG updates to be done the current ENG magnetic tape will be read in from unit 3, Ch. 5-6 and updated on unit 3, Ch. 3-4.
2. If there are DOC updates to be done the current DOC magnetic tape on unit 2, Ch. 3-4 will be read in and updated on unit 2, Ch. 5-6.
3. If there are deletions to be done both the current ENG (unit 3, Ch. 5-6) and the current DOC (unit 2, Ch. 3-4) magnetic tapes will be read in and cause new updated versions on unit 3, Ch. 3-4 and unit 2, Ch. 5-6 respectively.
4. An output listing of the updating will be written on unit 4, Ch. 5-6.

5. At the termination of the run, control goes to MC program (see section H).

G. After the completion of Updating

1. All ENG tapes generated on unit 3, Ch. 3-4 should be labeled "Current ENG xx", where xx runs consecutively from 01 in the order in which the tapes are generated.
2. The previous "Current ENG xx" (unit 3, Ch. 5-6) should be labeled "Prior ENG xx", where xx is the same number the tape had when it was current.
3. The "Prior ENG xx" becomes Free ENG.
4. All DOC tapes generated on unit 2, Ch. 5-6 should be labeled "Current DOC xx".
5. The previous Current DOC xx (unit 2, Ch. 3-4) should be labeled "Prior DOC xx".
6. The prior DOC xx should be labeled Free DOC.

H. Control returns to MC and the operator may do one of the following

1. Initiate a SEARCH by proceding as described in II B and omitting steps II C 1 and 2.
2. Initiate another UPDATE by proceding as described III B and omitting steps III C 1 and 2.
3. Terminate the run by typing

   END.

   which will cause "END OF TAPE" to be written on the output tape 8, unit 4, Ch. 5-6 and will rewind it.

I. Typewriter Messages during updating

MESSAGE	MEANING + ACTION
TAPE n	Tape error in reading or writing on logical tape unit n. Press start to retry except for TAPE 8 which procedes without correcting.
IF NO MORE DOC SW 3 UP, OTHERWISE MOUNT TP DOC xx ON UNIT 2, CH. 3. START	End of file on Current DOC input tape. If there's a Current DOC xx mount it, put jump key 3 down, and press START. If no more Current DOC tapes put jump key 3 up, press START.
WRONG TAP	Wrong DOC or ENG tape mounted, the number xx does not agree with the number typed above.
LOAD NEW TP FOR ENG xx ON UNIT 3, CH. 4.	End-of-output tape for ENG on unit 3, Ch. 4. Label and save the tape and mount a new Free tape for the next ENG tape.
LOAD NEW TP FOR DOC xx ON UNIT 2, CH. 6.	End-of-output tape for DOC on unit 2, Ch. 6. Label and save present tape and mount a new Free tape for the next DOC tape.
TOO MANY	Tape number for DOC or ENG exceeds 99. Program run terminated.
IF NO MORE ENG PUT SW 3 UP, OTHERWISE MOUNT TP ENG xx ON UNIT 3, CH. 5. START	End of file on ENG input tape unit 3, Ch. 5. If there is an ENG tape numbered xx mount it and put jump key 3 down, press START. If no ENG xx, put jump key 3 up. Press START.

SABIR2 - Master Control Program

I. FUNCTION - The function of the master control program is to communicate with the 1604 operator and read in the program from the system tape which meets the option the operator has selected.

II. Communication Procedure

A. Initially

"date;" is typed and the program waits for the operator to type in the date in the following form:

mm/dd/yy

where mm = 2 digit number specifying the month

dd = 2 digit number specifying the day

yy = 2 digit number specifying the year

B. Next the program types

"option;" and waits for the operator to type in SEARCH. or UPDATE., or END.

C. Error Procedures

1. If the operator types an illegal character the program will type ILLEGAL and wait for the operator to restart typing message or date.

2. If the operator does a carriage return the program will wait for her to restart typing the message or date.

D. Legal Characters which are acceptable as type writer input.

0	S
1	E
2	A
3	R
4	C
5	H
6	U
7	P
8	D
9	T
/	.
CR	N

III. Option selected

A. If the SEARCH option was selected, master control reads in the SEARCH - part 1 (SABIR2S1) program and gives control to it.

1. SABIR2S1 will in turn read in SABIR2S2 when it is needed.

2. At the end of a SEARCH run, control returns to master control.

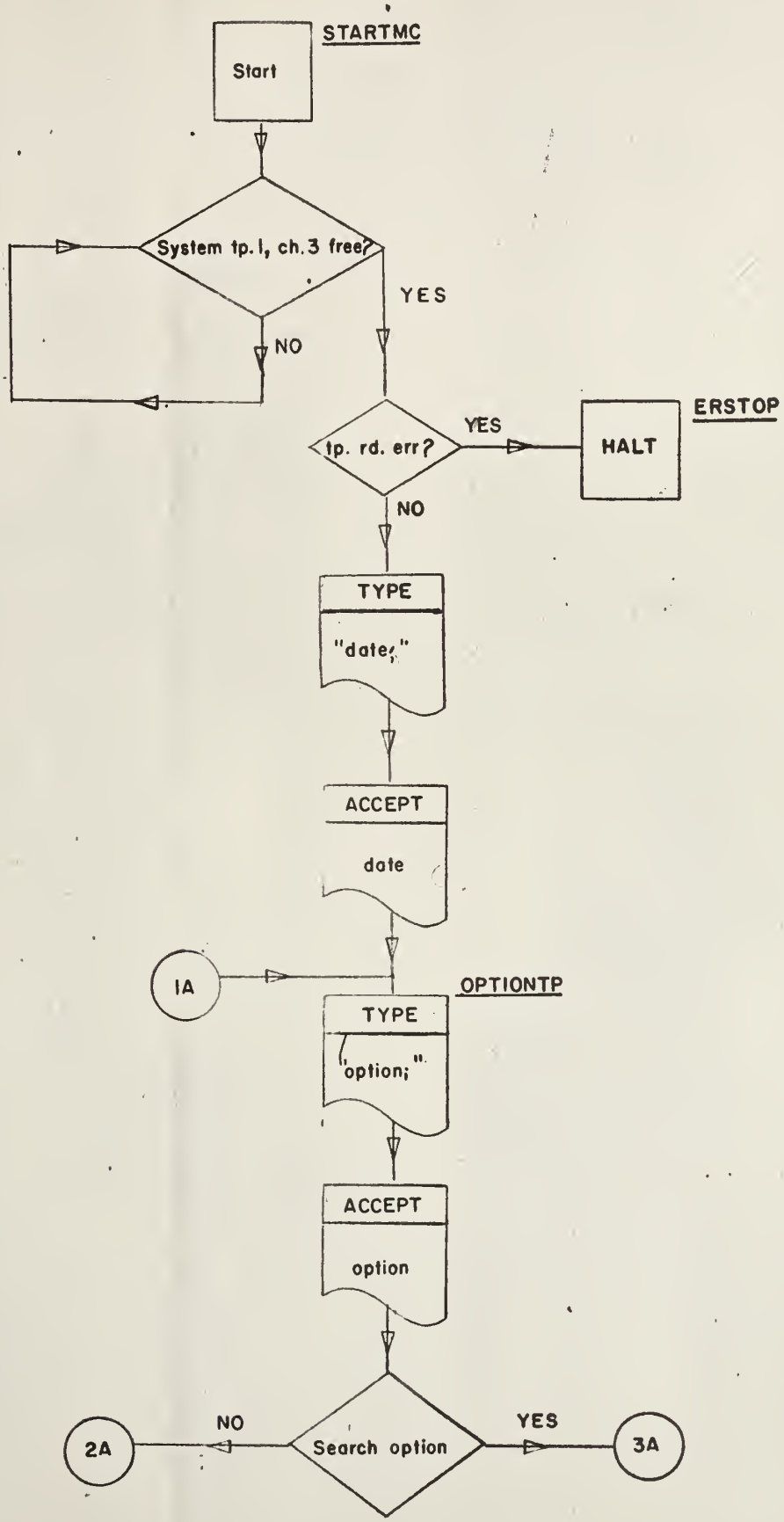
B. If the UPDATE option was selected, master control reads in the UPDATE program from the system tape and transfers control to it.

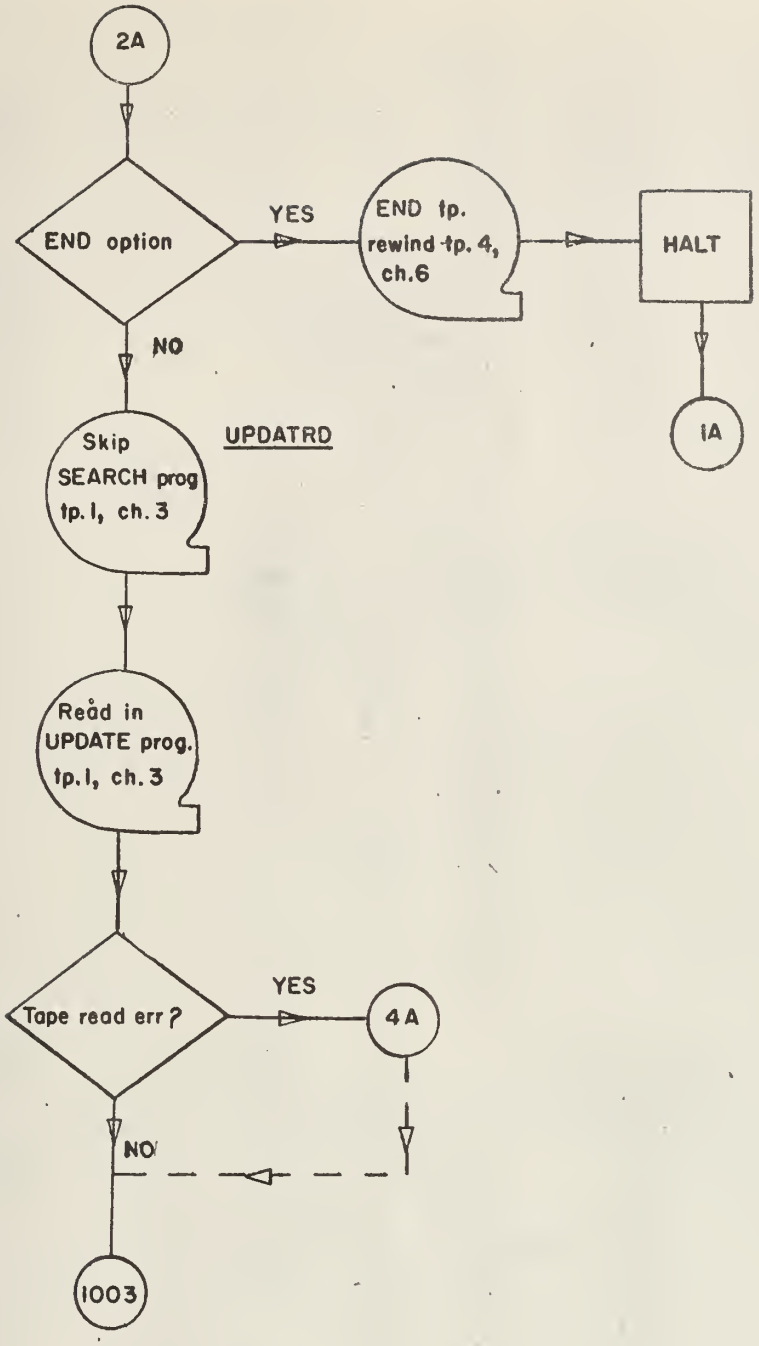
C. If the END option was selected, the output tape was ended by "END of TAPE" and rewound. The computer halts. Pressing start transfers control to the option or II B.

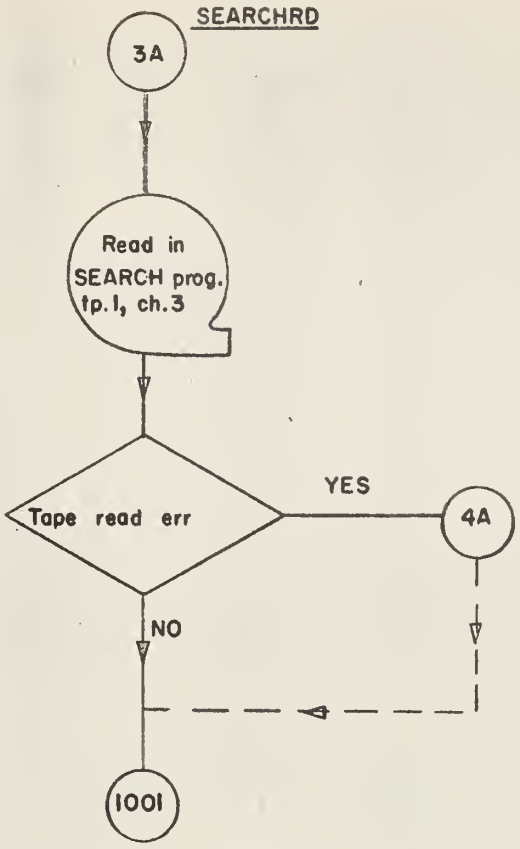
IV. After a run

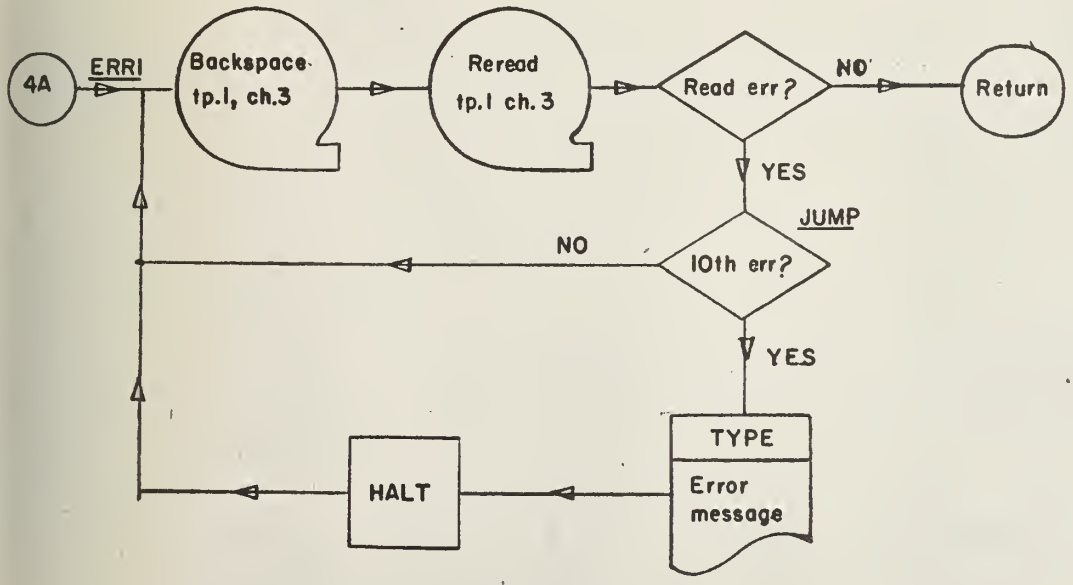
Control is returned to master control and it procedes as described in section II B.

FLOW CHART OF MASTER CONTROL PROGRAM




2A
END option
YES
END tp.
rewind tp. 4,
ch.6
HALT
1A
NO
UPDATRD
Skip
SEARCH prog
tp. 1, ch. 3
Read in
UPDATE prog.
tp. 1, ch. 3
Tape read err?
YES
4A
NO
1003


SEARCHRD
3A
Read in SEARCH prog. tp.1, ch.3
Tape read err
YES
4A
NO
1001


4A
ERRI
Backspace tp.1, ch.3
Reread tp.1 ch.3
Read err?
NO
Return
YES
JUMP
NO
10th err?
YES
TYPE
Error message
HALT

SABIR2 - SEARCH part I (SABIR2 S1)

I. Paper Tape Input Format for SEARCH part I (Ref. 1, p. 54-55)

A. Request record format

The input paper tape should consist only of request records. A request record consists of an identifying tag followed by source, date and uniterm codes in any order. A maximum length of 120 significant characters is allowed and the number of significant characters in the record must be a multiple of eight (See Appendix 1). The record is to be terminated by .. (double period punch).

1. Identifying Tag

a. The first 8 significant characters of the request record are taken to be the tag which identifies the request.

2. Sources

a. There may be zero to twelve sources specified.

b. Each source code must be 8 characters of the form ooxnnnn where x = 1,3,5,7 or 9 and n is any number between 0 and 9.

3. Dates

a. The date specification consists of 16 characters and is of the form DATExxxxTHRUyyyy where xxxx is the first date and yyyy is the last date of interest.

b. The 4 digit date is of the form YYMM where YY is the year and MM is the month.

4. Uniterms

a. 0-12 uniterms may be specified.

b. Each uniterm is 8 characters in length and of the form ooynnnnn where y = 0,2,4,6, or 8 and n is any number between 0 and 9.

B. Error messages (also see Appendix 6)

All error messages on the input format will be printed on the general output tape in the following form:

ERROR "WORD", REQUEST DELETED

where "WORD" is a key word to the type of error and may be the following:

1. UNLISTED - This means an illegal character was found on the input paper tape (see appendix 2 for a list of such char.).
2. TOO LONG - The input record exceeded 120 significant characters.
3. NOT EVEN - The number of characters in the record is not a multiple of 8.
4. 1 WORD - The input record consisted of 1 or less words (groups of 8) and is therefore illegal.

II. Arrangement of Requests in memory (1604 core storage) by SABIR2S1.

As the requests are read in, they are converted to BCD and then split up into sections. All the tags are put into one block, the dates in another block, the uniterms another, and the sources in still another.

A. Identifying tags

These are placed sequentially, in the order in which they are read in, into a block called IDENT, each tag occupying one word.

B. Dates

All dates are expanded to 8 characters (leading octal zeros inserted) and BCD zeros are converted to octal zeros (for comparison purposes later).

1. The beginning dates are stored sequentially, in the order in which they are read in, into a block called FRSTDATE, one date per word. If no date has been specified, zeros are inserted for the beginning date.

2. The terminal dates are stored sequentially, in the order in which they are read in, into a block called LASTDATE, one date per word. If no date has been specified for a request, 9999 is used for its terminal date.

C. Source Codes

Each request is designated 13 words for source codes. The first word of the 13 contains the number of source codes for this request followed by the 0-12 source codes. As the requests are read in they are sequentially assigned 13 words in the block named SOURCES.

D. Uniterms

The uniterms for each request are put in a block named UNITERMS in the same manner in which the sources are stored.

III. Upon entering the SEARCH Part II (SABIR2S2) Routine

A. The requests are as described in section II.

B. A latch or word REPEAT has been set to indicate whether to go back and read more paper tape after terminating the Search about to be commenced. (REPEAT is non-zero if more paper tape is to be read)

C. Current file tapes should already be mounted.

1. DOC 01 should be on unit 2, Ch. 3.

2. ENG 01 should be on unit 3, Ch. 5.

D. Other tapes needed.

1. SABIR2 SYSTEM tape on unit 1, Ch. 3.

2. Output tape on unit 4, Ch. 6.

IV. Input magnetic tape formats

See appendix 3.

V. Actual Search Operation (SABIR2S2)

A. Initializes

The labels and first records from the DOC tape and ENG (bibliography) tape are read in. If the bulletin number (accession no.) of the bibliography is less than or equal to the DOC bulletin no. a switch is set so that an ENG record will be read the next time a DOC record is read. This is to keep the ENG tape paced as well as possible with the DOC tape.

B. Searching

The program next compares the present DOC record with each of the requests, checking the source, dates and then uniterms of a request to see if there is a match.

1. If a match occurs the present ENG bulletin no. is checked.

   a. If the ENG accession # is greater than the DOC # then there is no bibliography for this document and only the accession no. plus the request I.D. is moved to the output buffer, OUTPUT. The program then goes to check the rest of the requests.

   b. If the ENG # is less than the present DOC #, the ENG tape is read in until either V.B.1. a. or c. occurs.

   c. If the ENG # equals the DOC #, then the whole bibliography plus the request I.D. is moved to the output buffer, OUTPUT. The indicator to read ENG next time is set and the program goes back to see if the DOC satisfys any other requests.

2. If no match is found between the current DOC and any of the requests, the next DOC record is brought in and a new ENG record is brought in if necessary. From this point processing continues as explained in section V.B..

VI. Arranging the Output

When a match has occurred the bibliography is moved to the next available space in the output block.

A. Size of output block OUTPUT

OUTPUT extends from the end of the program (SABIR2S2) to the end of core. It is subdivided into groups of 84 words, each group accomodating the information for one match between a DOC and a request. The output is stored sequentially in this block, i. e. in the order in which the matches are made.

B. Format of a match's OUTPUT

The 84 words are used as follows:

1. The 1st word contains the requestor's identification word as read in from paper tape in part 1 and stored in IDENT.
2. If there was a bibliography, it is in the next 83 words in exactly the same order it was in on the ENG tape (see appendix 3).
3. If no bibliography was available a word count of three is set in the 2nd word of the 84. A double space control character is moved into the 3rd word of the 84 word group and the accession no. of the bulletin is moved into the 4th word. There is no more output than the above in this case.

C. Upon filling the output buffer OUTPUT

When OUTPUT has been completely filled or when there are no more DOC magnetic tapes, the OUTPUT is sorted and written on tape 4, channel 6 in a format such that the tape may be printed with an IBM 717 or IBM 1401 program using program control.

1. Each requestors identification is compared with the identification of each group of output. If there is any output for the requestor, his identification and the page no. of his output for this printing are printed at the top of a page followed by the accession numbers and bibiliographies of his answers. If he has more than 1 page of output, the heading is repeated at the top of each page. (see appendix 5 for sample).

VII. When an END-OF-FILE is encountered on the input magnetic tapes

A. The DOC tapes

A message is printed on the typewriter to put DOC tape no. xx on unit 2, channel 3, or if there are no more DOC tapes to put jump key 3 up (otherwise make sure it is down). The computer then halts to allow mounting of the tape. Upon STARTing.

1. If there are more DOC tapes, the label is checked to make sure this is the correct tape. If it isn't procedure VII. A. is repeated. Otherwise the program continues as described in V.B..

2. If there are no more DOC tapes to be processed, the output buffer is emptied. A check is then made to see if more input paper tape requests are waiting in the paper tape reader.

   a. If so, a message is typed to remount ENG01 and DOC01 and the computer halts. When START is pressed the program restarts, reading paper tape as described in section II.

   b. If there are no more requests to process control goes to the Master Control Program for selection of a new SABIR2 option.

B. The ENG tape

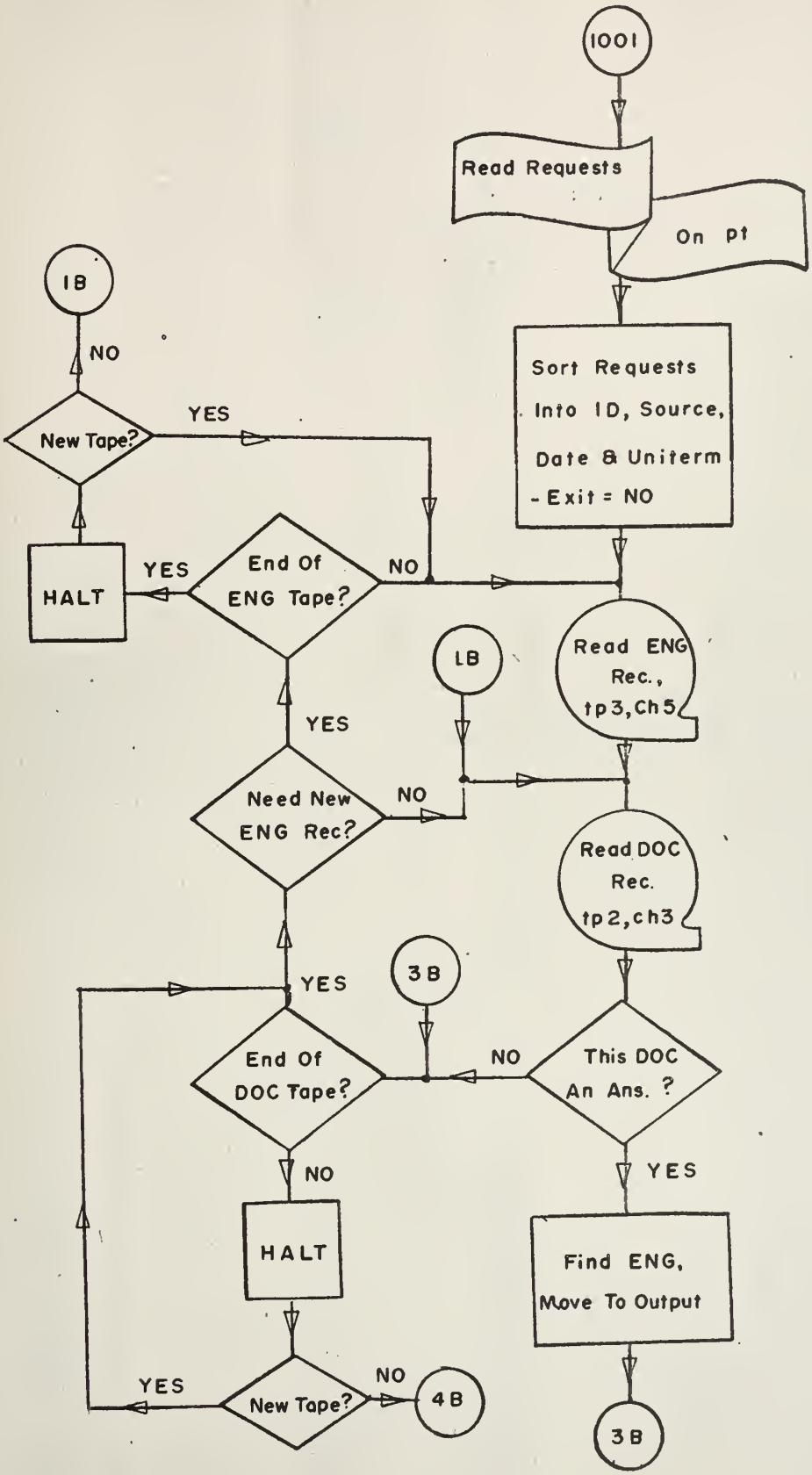
A message is typed to mount ENG tape no. xx or set jump key 3 if there are no more ENG tapes.

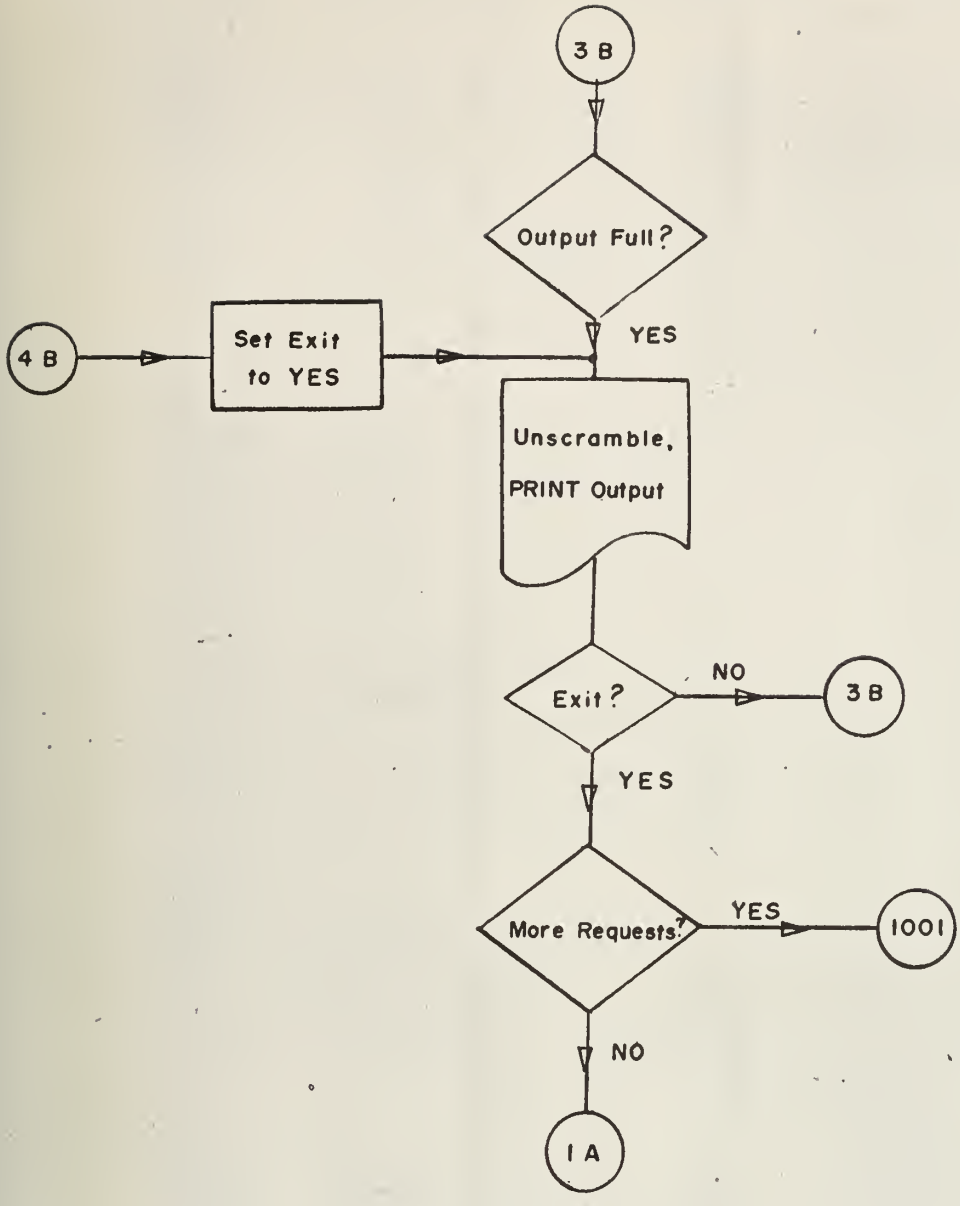
1. If there are more ENG tapes, the label is checked to see if the proper tape has been mounted. If not the program

returns to step VII B. If the correct tape has been mounted the program continues from where it left off.

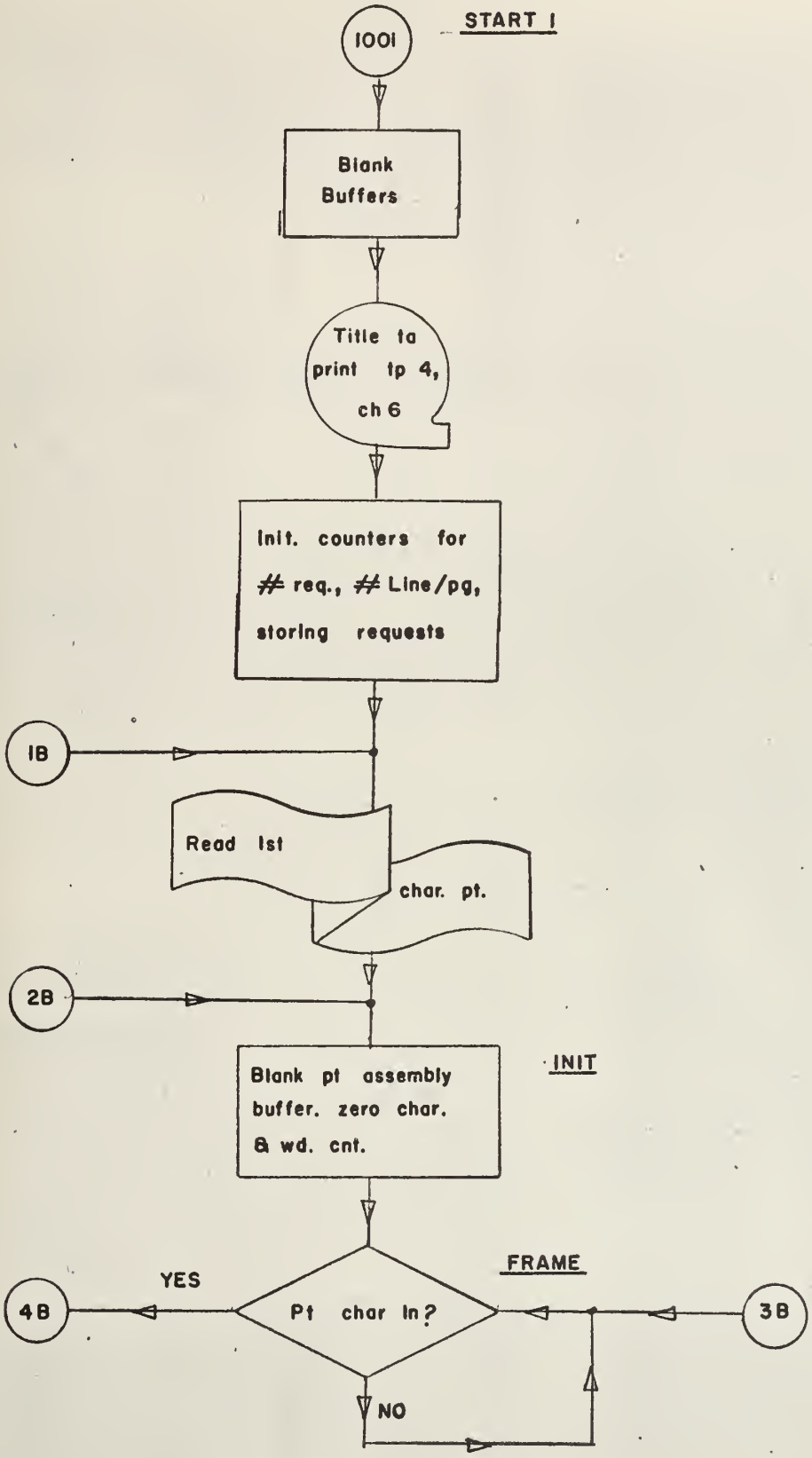
2. If there are no more ENG tapes the current ENG tape no. is set to all nines (this indicates no bibliography for the DOC's being processed) and the program continues from where it left off before.

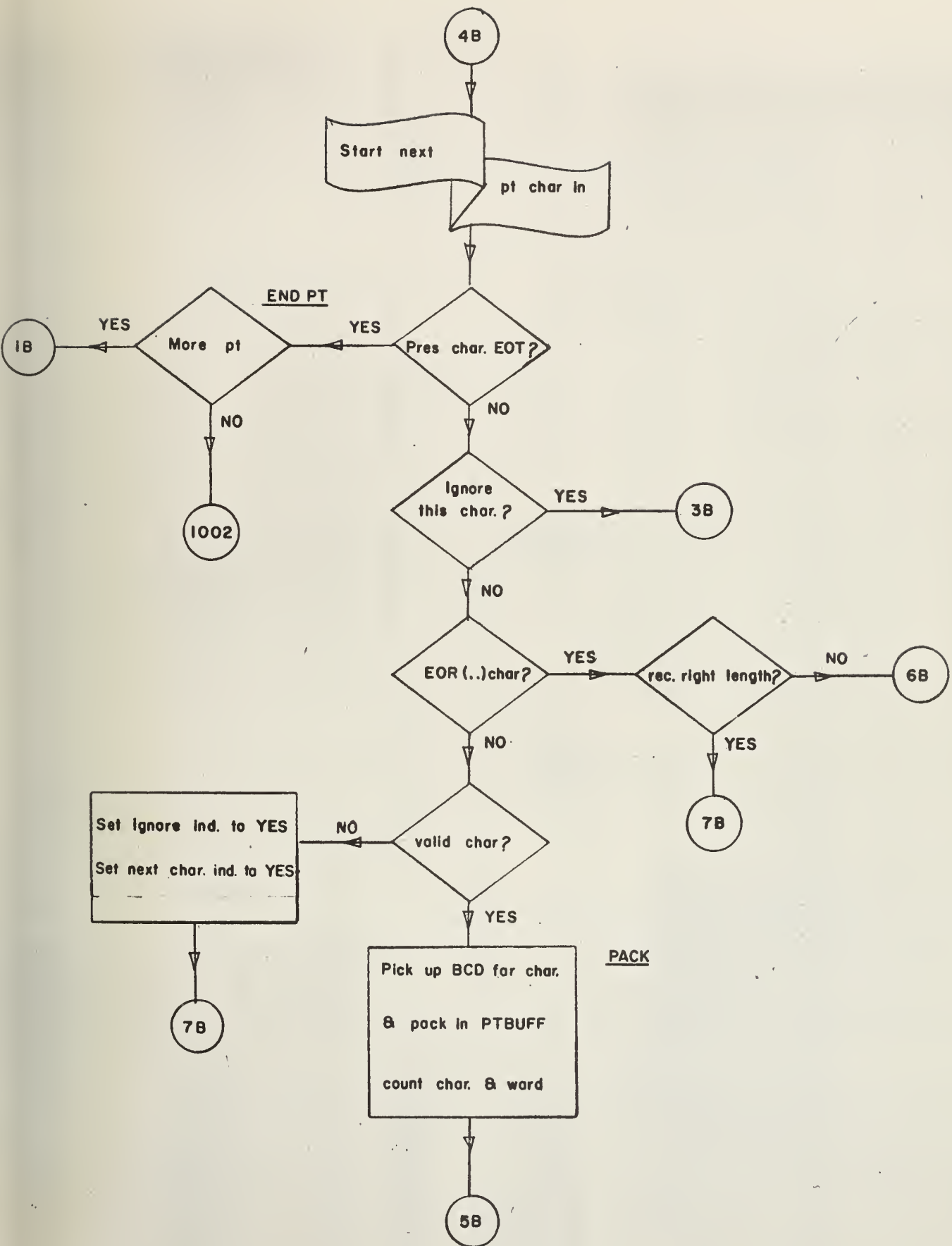
General Flowchart SEARCH

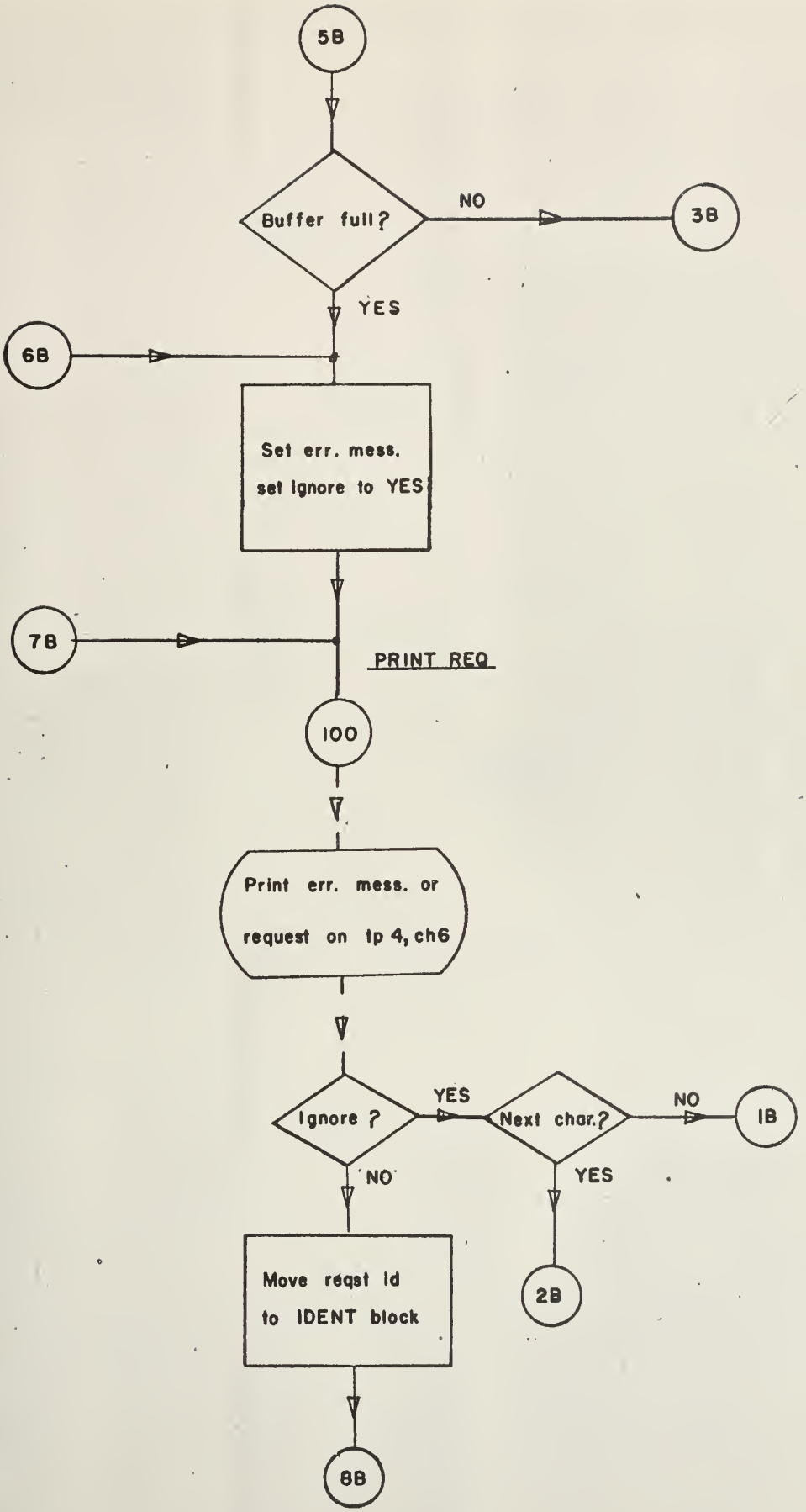


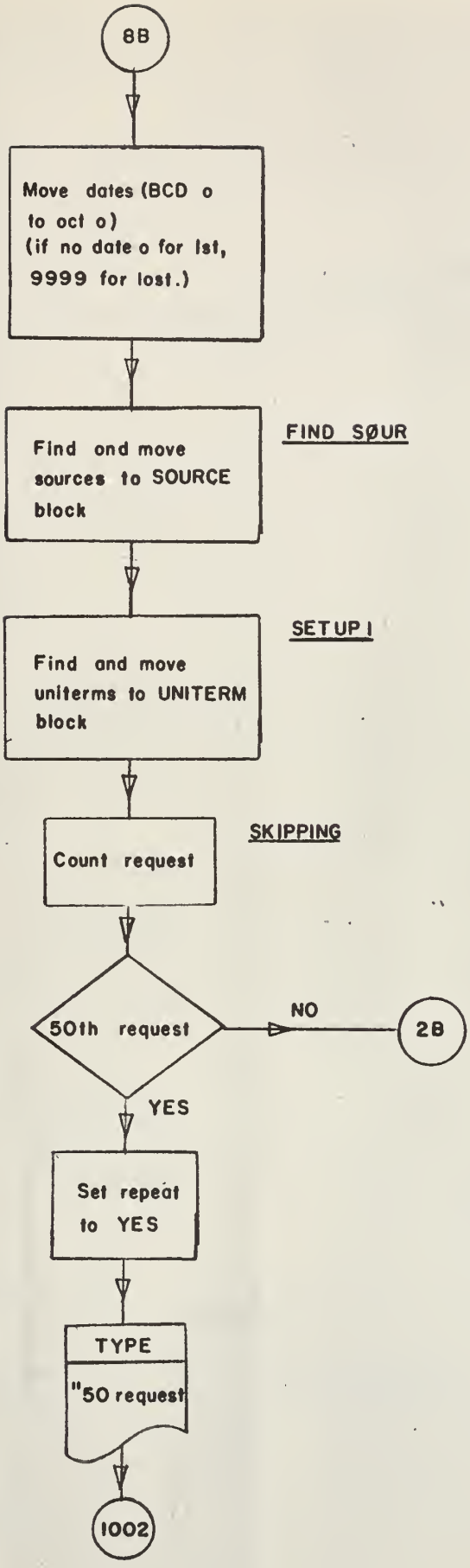

3 B
Output Full?
YES
4 B
Set Exit to YES
Unscramble, PRINT Output
Exit?
NO
3 B
YES
More Requests?
YES
1001
NO
1 A
(Back to MC)

Detailed Flowchart of SEARCH Part I

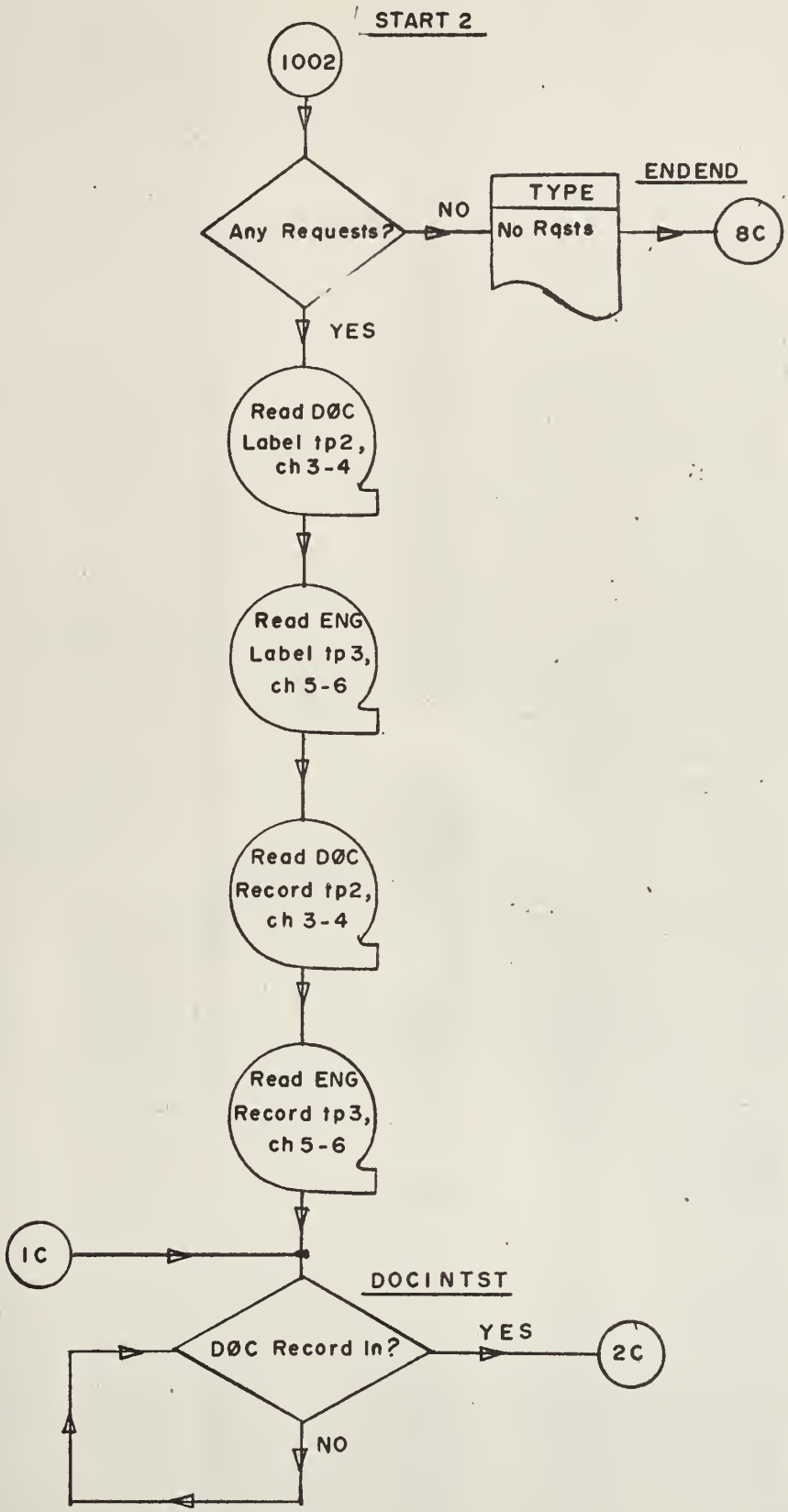


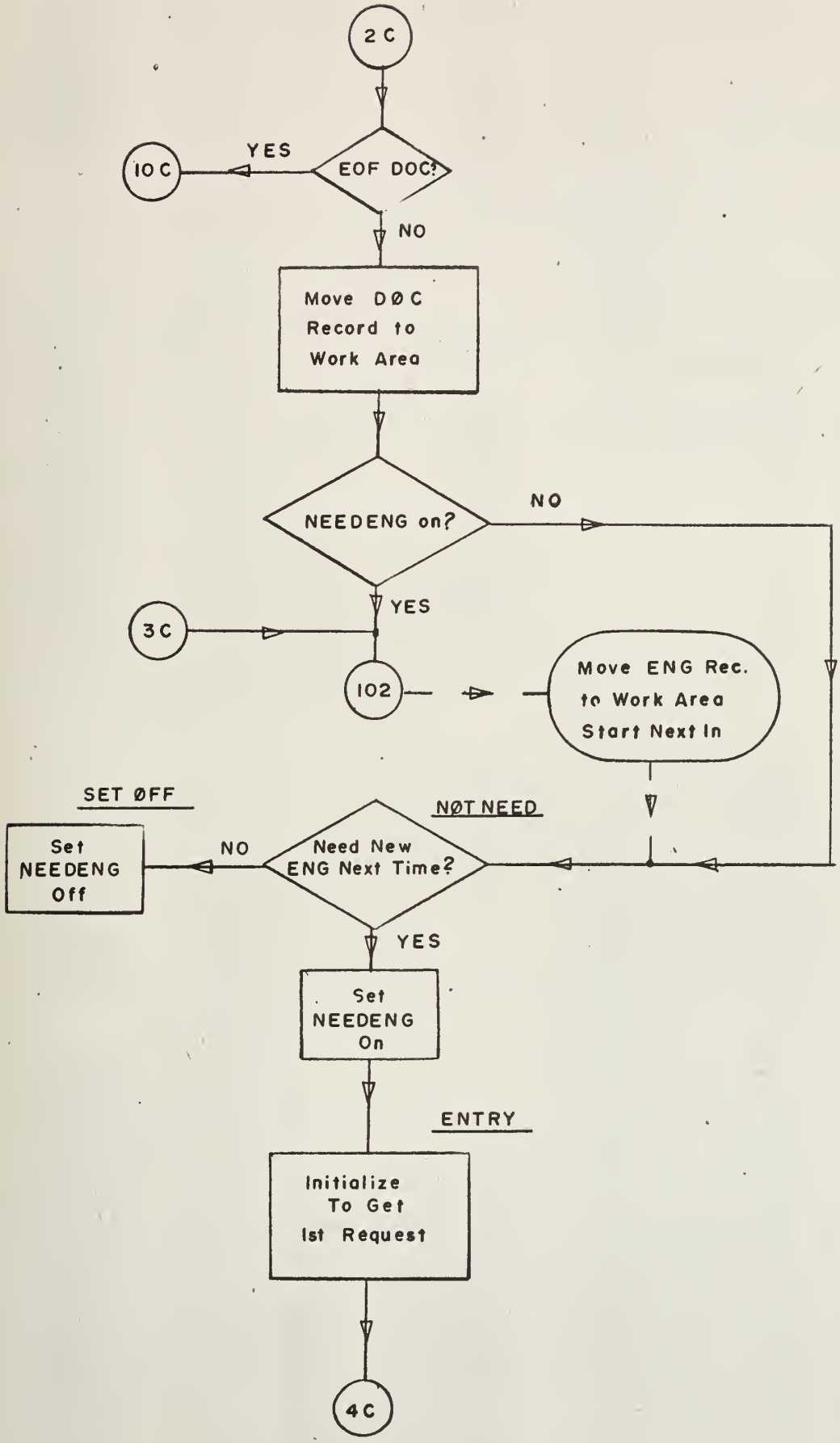

4B
Start next
pt char in
END PT
YES
1B
More pt
YES
Pres char. EOT?
NO
NO
1002
Ignore
this char.?
YES
3B
NO
EOR (..)char?
YES
rec. right length?
NO
6B
NO
YES
7B
Set Ignore ind. to YES
Set next char. ind. to YES
NO
valid char?
YES
7B
PACK
Pick up BCD for char.
& pack in PTBUFF
count char. & ward
5B

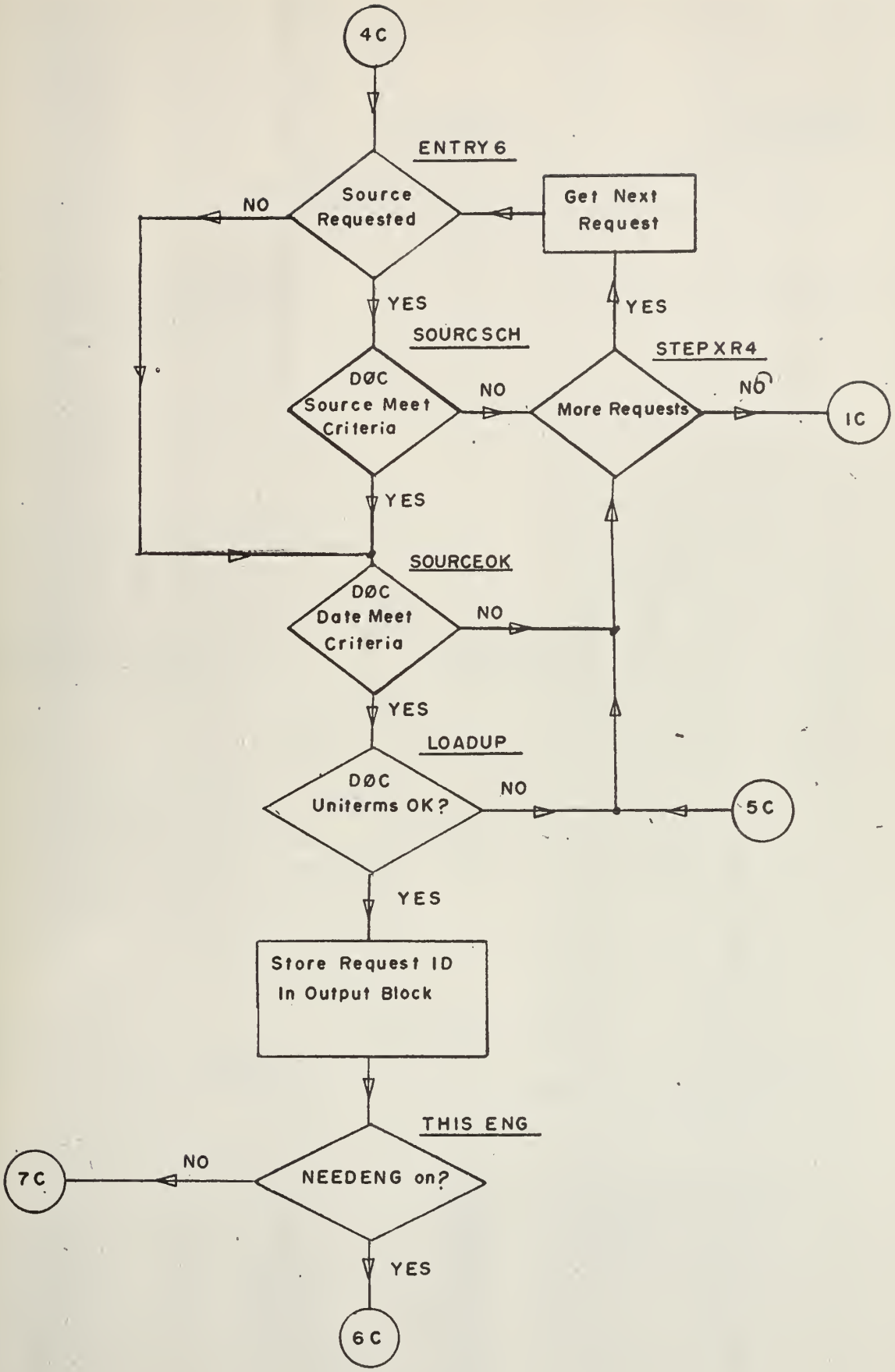

5B
Buffer full?
NO
3B
YES
6B
Set err. mess.
set ignore to YES
7B
PRINT REQ
100
Print err. mess. or
request on tp 4, ch6
Ignore ?
YES
Next char.?
NO
1B
NO
YES
Move reqst id
to IDENT block
2B
8B

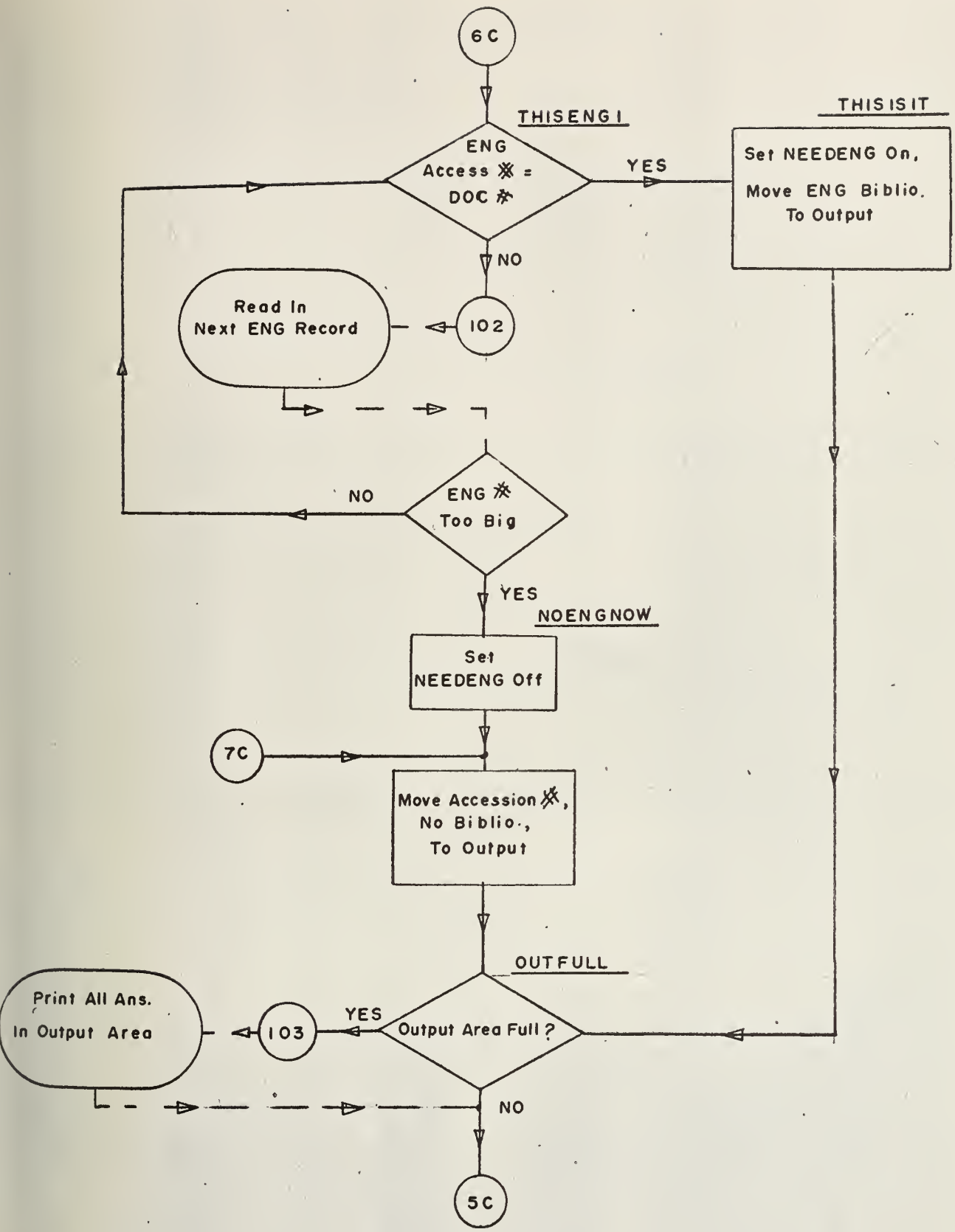

8B
Move dates (BCD o to oct o) (if no date o for lst, 9999 for lost.)
Find ond move sources to SOURCE block
FIND SØUR
Find and move uniterms to UNITERM block
SETUP I
Count request
SKIPPING
50th request
NO
2B
YES
Set repeat to YES
TYPE
"50 request
1002

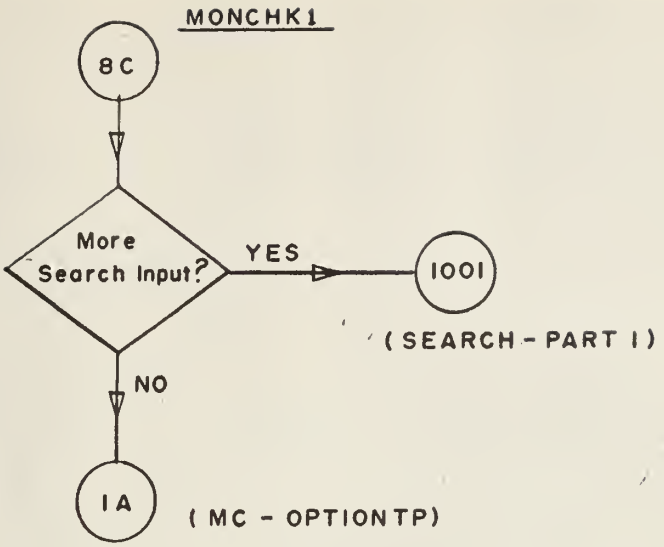
Detailed Flowchart of SEARCH - Part 2

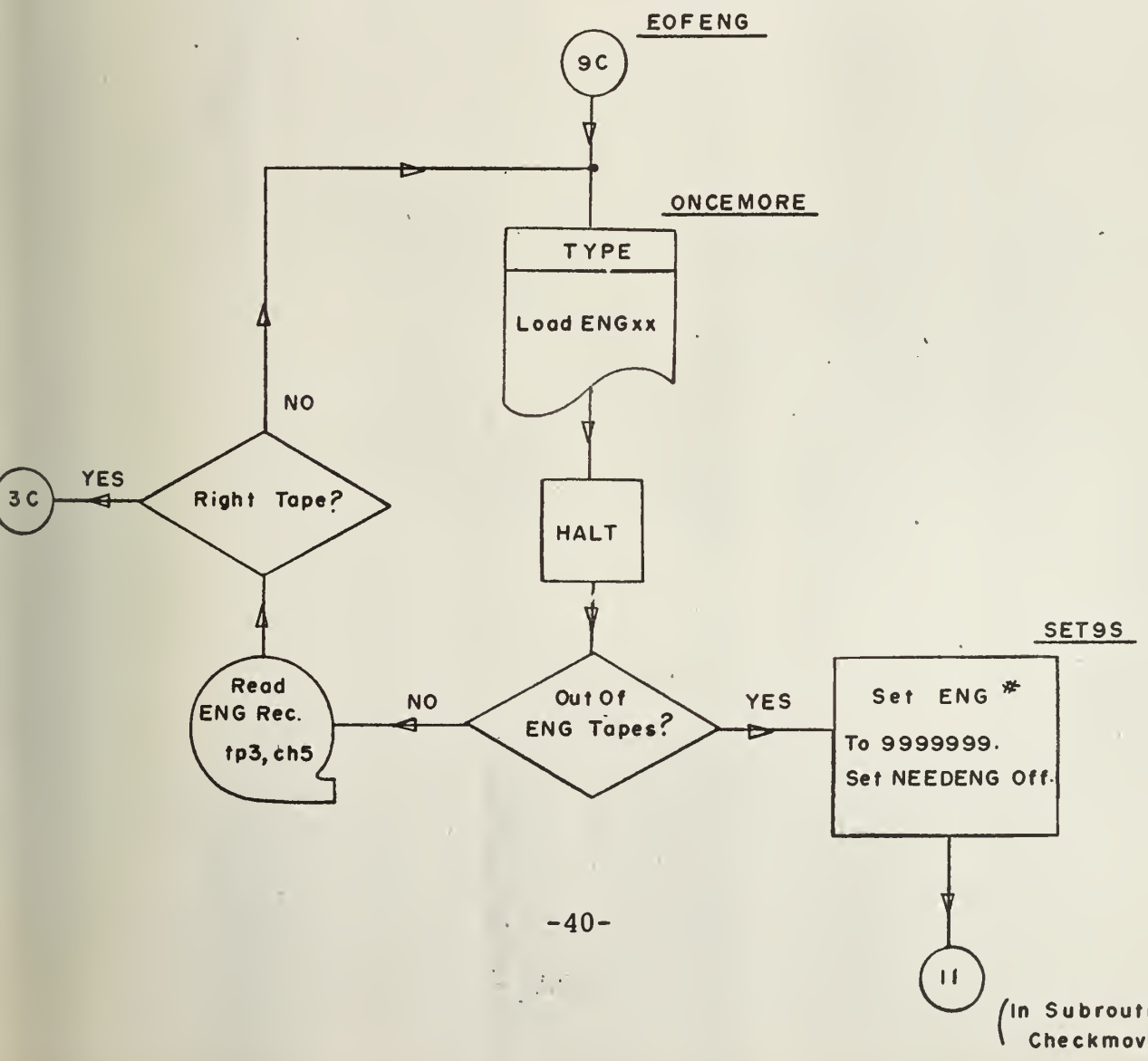


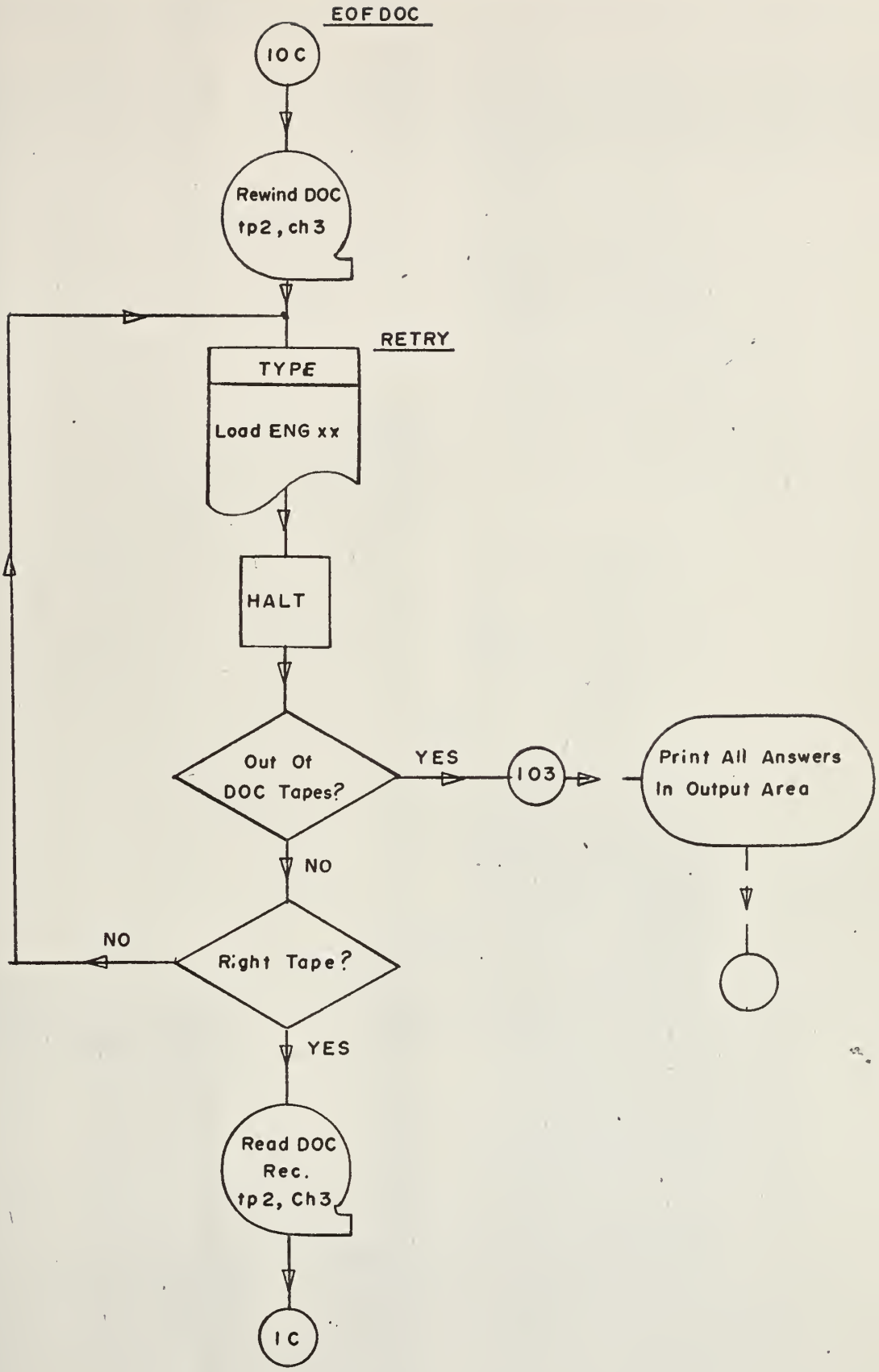

2C
EOF DOC?
YES
10C
NO
Move DØC Record to Work Area
NEEDENG on?
NO
YES
3C
102
Move ENG Rec. to Work Area Start Next In
SET ØFF
NØT NEED
Set NEEDENG Off
NO
Need New ENG Next Time?
YES
Set NEEDENG On
ENTRY
Initialize To Get 1st Request
4C


4C
ENTRY 6
Source Requested
NO
Get Next Request
YES
YES
SOURCSCH
STEPXR4
DØC Source Meet Criteria
NO
More Requests
NO
1C
YES
SOURCEOK
DØC Date Meet Criteria
NO
YES
LOADUP
DØC Uniterms OK?
NO
5C
YES
Store Request ID In Output Block
THIS ENG
NEEDENG on?
NO
7C
YES
6C

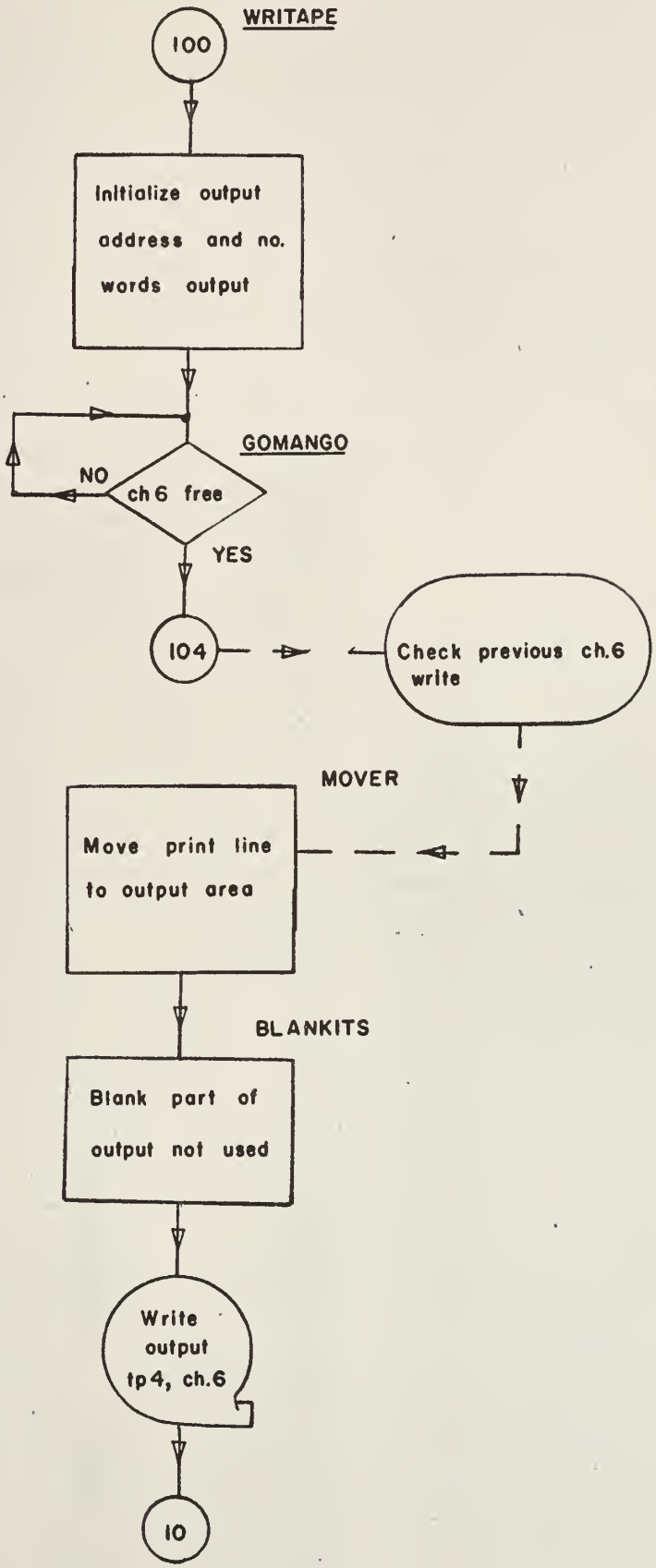

6C
THISENG1
ENG Access ※ = DOC ※
YES
THISISIT
Set NEEDENG On, Move ENG Biblio. To Output
NO
Read In Next ENG Record
102
NO
ENG ※ Too Big
YES
NOENGNOW
Set NEEDENG Off
7C
Move Accession ※, No Biblio., To Output
OUTFULL
Print All Ans. In Output Area
103
YES
Output Area Full ?
NO
5C

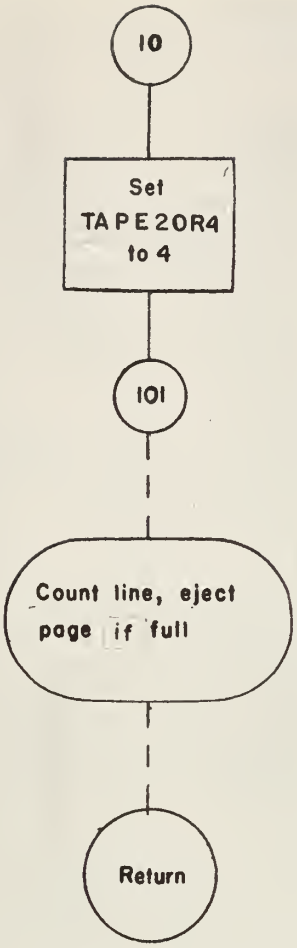

MONCHK1
8C
More Search Input?
YES
1001
(SEARCH - PART 1)
NO
1A
(MC - OPTIONTP)

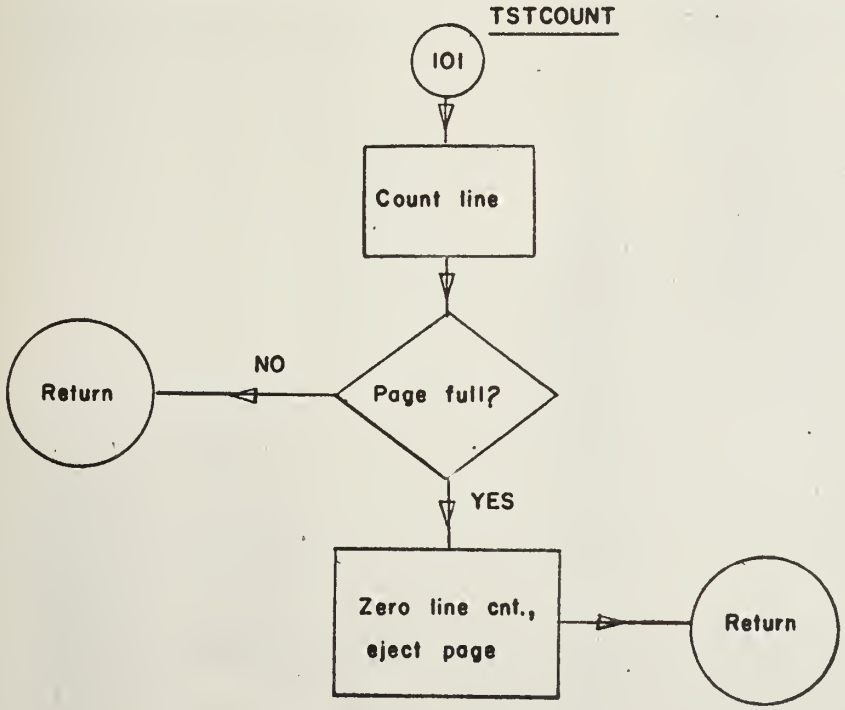

EOFENG
9C
ONCEMORE
TYPE
Load ENGxx
HALT
Out Of ENG Tapes?
NO
Read ENG Rec. tp3, ch5
Right Tape?
NO
YES
3C
YES
SET9S
Set ENG *
To 9999999.
Set NEEDENG Off.
11
(In Subroutine Checkmove)

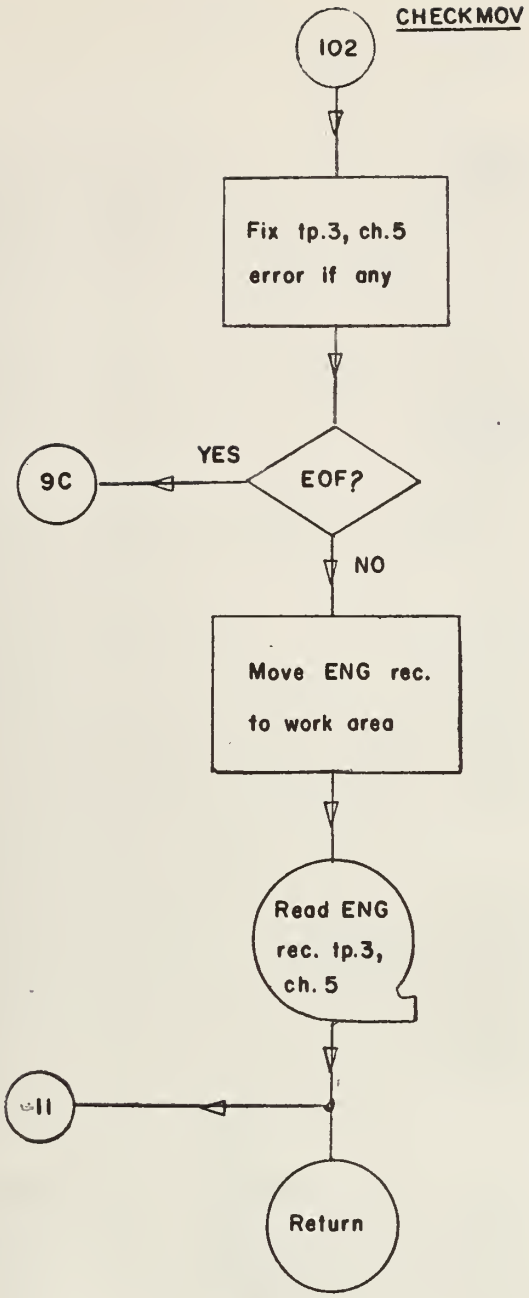

EOF DOC
10C
Rewind DOC
tp2, ch3
RETRY
TYPE
Load ENG xx
HALT
Out Of
DOC Tapes?
YES
103
Print All Answers
In Output Area
NO
Right Tape?
NO
YES
Read DOC
Rec.
tp2, Ch3
1C

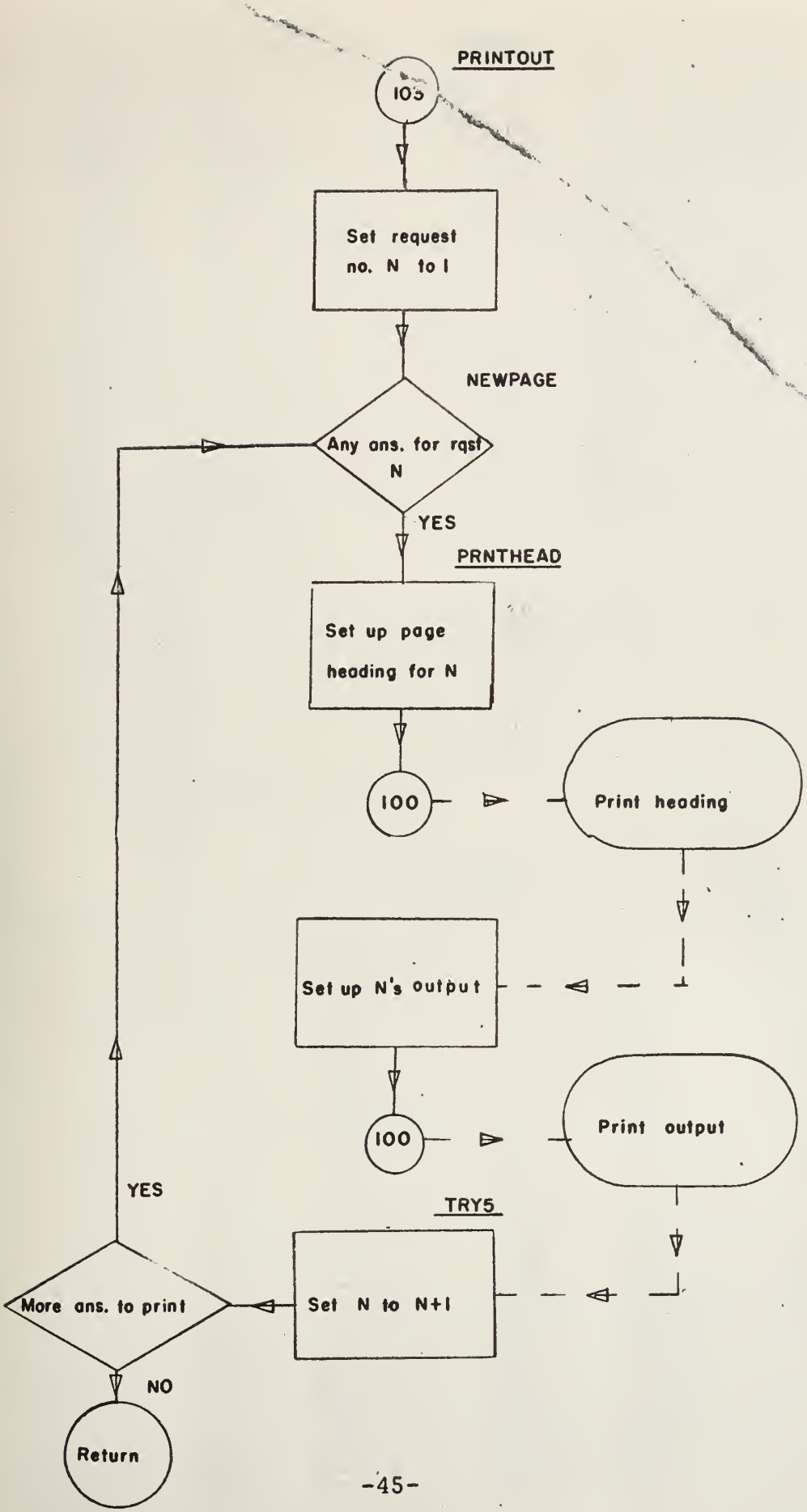
SEARCH SUBROUTINES

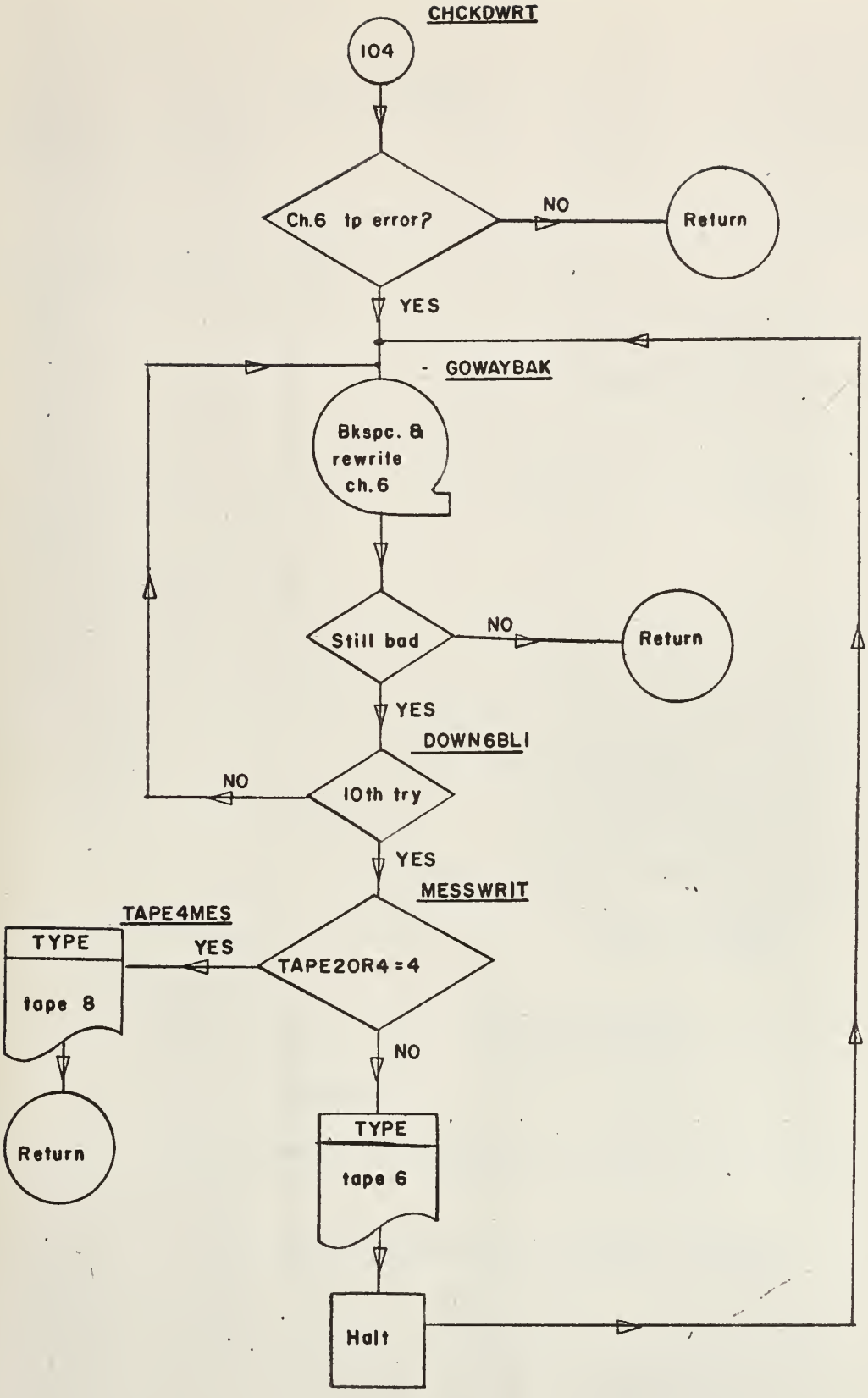



10
Set
TAPE20R4
to 4
101
Count line, eject
page if full
Return


TSTCOUNT
101
Count line
Page full?
NO
Return
YES
Zero line cnt.,
eject page
Return


CHECKMOV
102
Fix tp.3, ch.5
error if any
YES
9C
EOF?
NO
Move ENG rec.
to work area
Read ENG
rec. tp.3,
ch. 5
11
Return


PRINTOUT
105
Set request no. N to 1
NEWPAGE
Any ans. for rqst N
YES
PRNTHEAD
Set up page heading for N
100
Print heading
Set up N's output
100
Print output
TRY5
YES
More ans. to print
Set N to N+1
NO
Return


CHCKDWRT
104
Ch.6 tp error?
NO
Return
YES
GOWAYBAK
Bkspc. & rewrite ch.6
Still bad
NO
Return
YES
DOWN6BLI
NO
10th try
YES
MESSWRIT
TAPE4MES
TYPE
tape 8
YES
TAPE2OR4 = 4
NO
Return
TYPE
tape 6
Halt

I. Paper Tape Input Portion

This part of the program reads in the paper tapes to update DOC or ENG magnetic tapes or delete from both tapes.

A. Paper tapes to update DOC magnetic tapes and/or cause deletions from both ENG and DOC magnetic tapes. The paper tape need not be dated -- if it is the date will be noted as an error and processing will continue. All characters are interpreted as shown in Appendix 1.

1. DOC update records

DOC update records are in the same format as the DOC magnetic tape records. (see Ref. 1, pp. 54-55 and Appendix 5). As they are read in they are sorted into order of ascending accession no. and stored in a block called ADDITION with 15 words devoted to each record. A count of the no. of DOC update records is stored in the cell named ADDCOUNT.

2. Delete records

Delete records have the following format:

a. The word TODELETE

b. Followed by up to 14 accession numbers of the form

$\begin{pmatrix} u \\ s \\ c \\ v \end{pmatrix}$ nnnnnnn where n is an integer $o \leq n \leq 9$.

All deletions are sorted into ascending order of accession number (1 deletion per word) and stored in a block named DELETION (BCD zeros and the 1st letter are still present) with the no. of deletions stored in the cell DELETCNT.

B. Paper Tapes to Update ENG magnetic tapes

If jump key 2 is up (on) the computer will interpret the input paper tape as being a bibliography tape (i.e. ENG update tape). These paper tapes are produced at the same time as the bibliography cards for the library are produced. Each record constitutes the bibliography of one technical document.

1. All information following 2 carriage returns and preceding a .. (EOR) will be considered the bibliography by the program. Any intermediate information will be ignored (see Reference 3).

2. The first word of the record is assumed to be the accession number and of the form

u s c v	-xx,xxx	or	u s c v	-xxx,xxx	or
u s c v	-x,xxx,xxx	where	x is an integer and $0 \leq x \leq 9$ and the composite number must have at least 5 significant digits.		

3. The bibliography information is read in and the characters translated according to Appendix 2. It is then arranged into line images of 120 characters (15 words) per line, each line

preceded by a 1 word (8 char.) control for printing.

a. Word 1 - binary word count of bibliography

b. Word 2 - print control word | obbbbbbb |

c. Word 3 - the accession no. | Lnnnnnn |

where L = U, S, C, V

n = 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

d. Word 4 - control | bbbbbbb |

e. Word 5 - 19 1 line of bibliography

f. Word 20 - | bbbbbbb |

g. Word 21 - 35 line 2 of bibliography

etc.

4. They are then sorted into order of ascending accession no. and stored in blocks of 83 words per bibliography record in a block named ENGLISH and the no. of bibliographies is stored in the cell called ENGCOUNT.

II. Initialization to Update

A. External - magnetic tapes necessary. All 6 tapes are necessary if deleting. If only updating the DOC tape, the ENG tapes may be omitted and if only updating ENG tapes, the DOC tapes may be omitted.

1. System tape - unit 1, Ch. 3-4

2. Current DOC input tape - unit 2, Ch. 3-4

(usually start with DOC 01)

3. Blank tape - unit 3, Ch. 3-4

(on which to generate a new ENG tape, if updating the ENG tapes)

4. Current ENG tape - unit 3, Ch. 5-6

5. Blank tape - unit 2, Ch. 5-6

(on which to generate new DOC tape)

6. Blank tape - unit 4, Ch. 5-6

(for output listing of addition and deletions)

B. Internally

If Deletions are requested, switches ENGSWITC and DOCSWITC are set on (to - 1) to indicate that both DOC and ENG magnetic tapes need to be altered. Otherwise the ENGCOUNT and ADDCOUNT are tested and the switches are set on if updating is to be done and off (to zero) if updating is not to be done to the ENG and DOC tapes respectively.

III. Processing

A. If both DOC and ENG updating or deleting are necessary the program alternately reads in a DOC tape record, checks if it is to be updated or deleted, then does the same for an ENG tape record.

1. If the tape record is to be updated, the new record is inserted in the proper place on the updated tape or replaces a record on the tape.

2. If it is to be deleted then the record is not copied on the new current file being created.

3. If the end of either input tape is reached or the end of an output tape, messages are typed and the program waits for a new tape to be mounted. When there are no more input tapes of one kind, processing continues as described in section

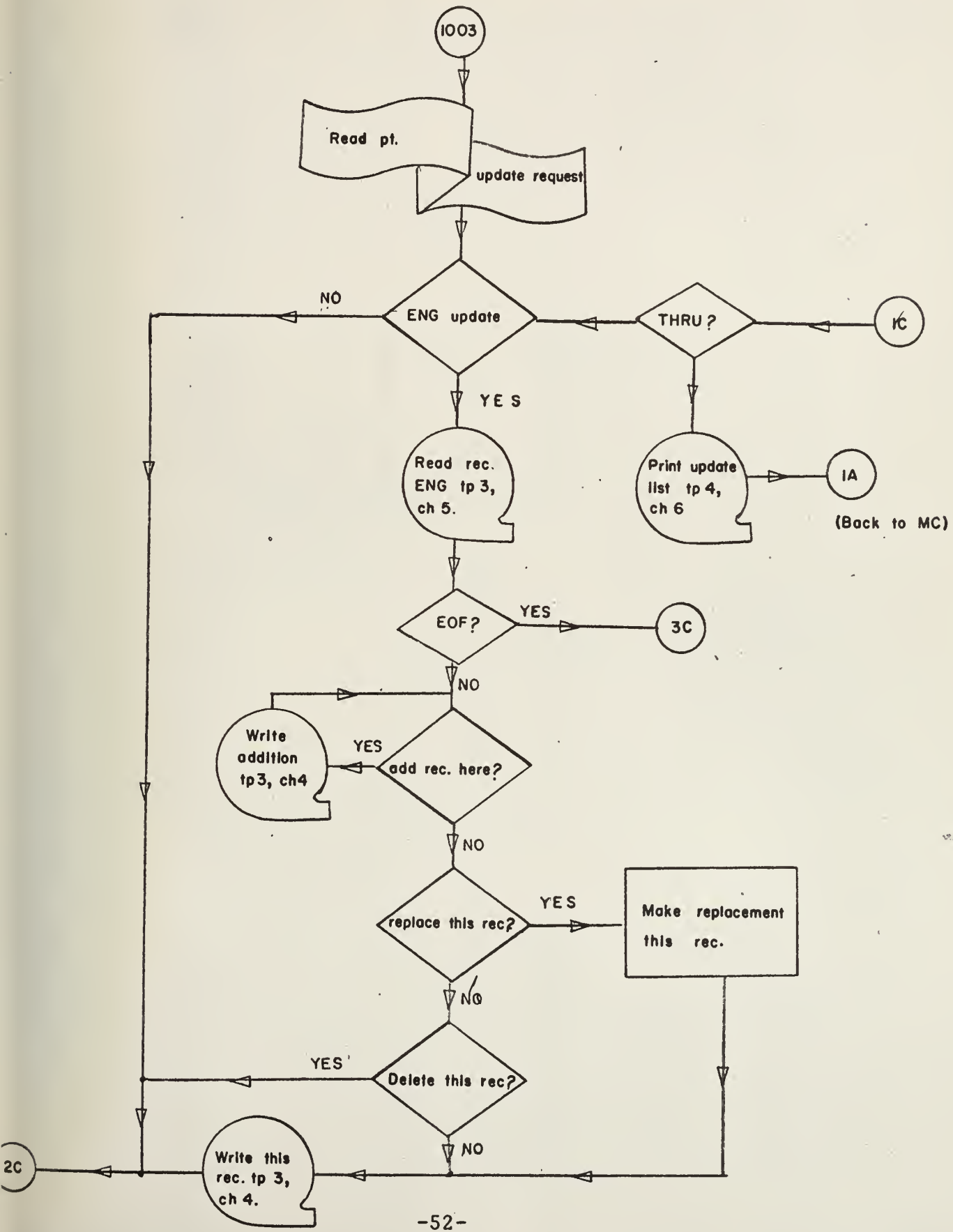
III B for updating only 1 type of tape.

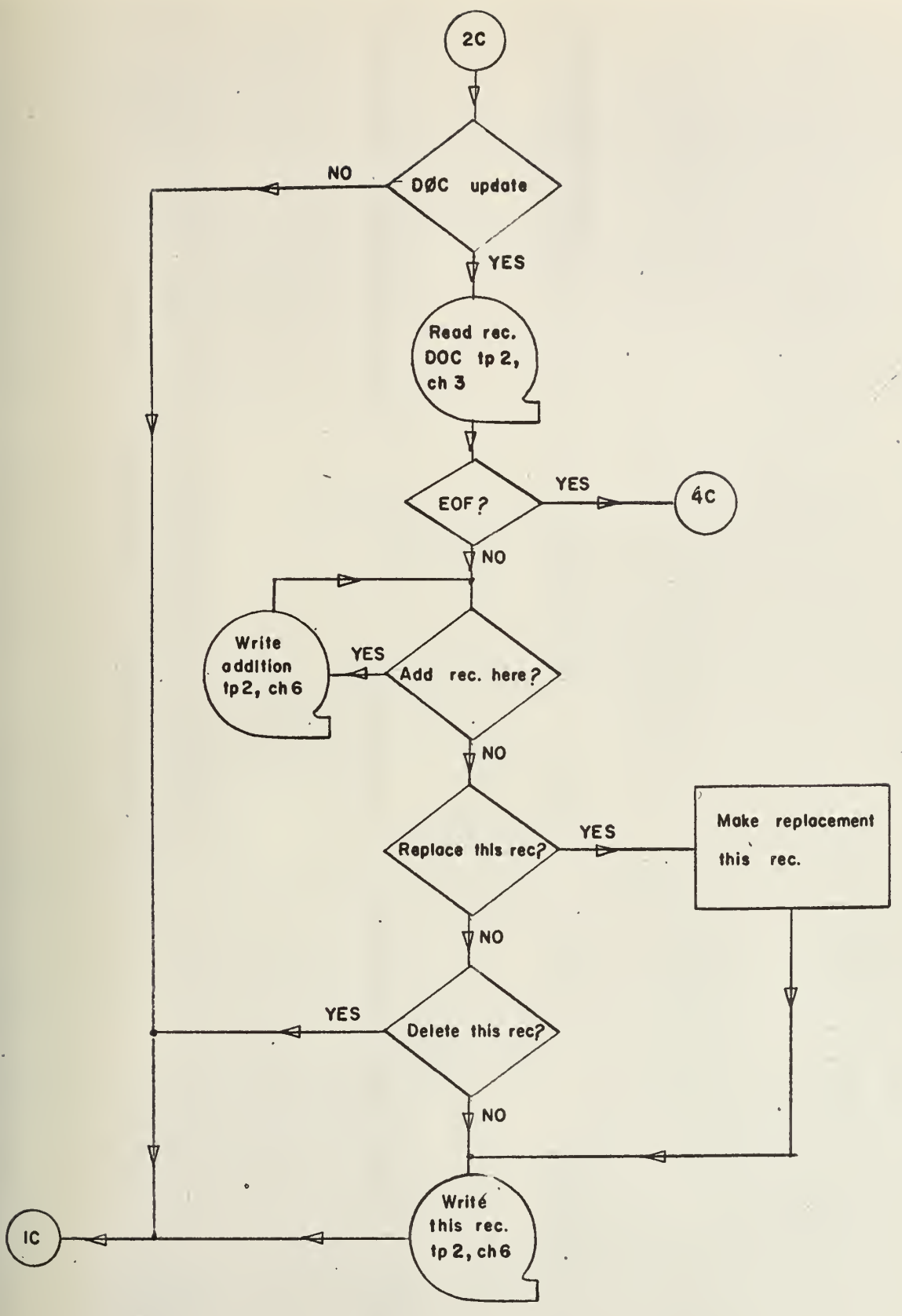
B. Updating just ENG or just DOC, the program procedes as in III A but the switch is set off which controls reading 2 types of tape, so only one type is read in and only 1 type of new current file is created.

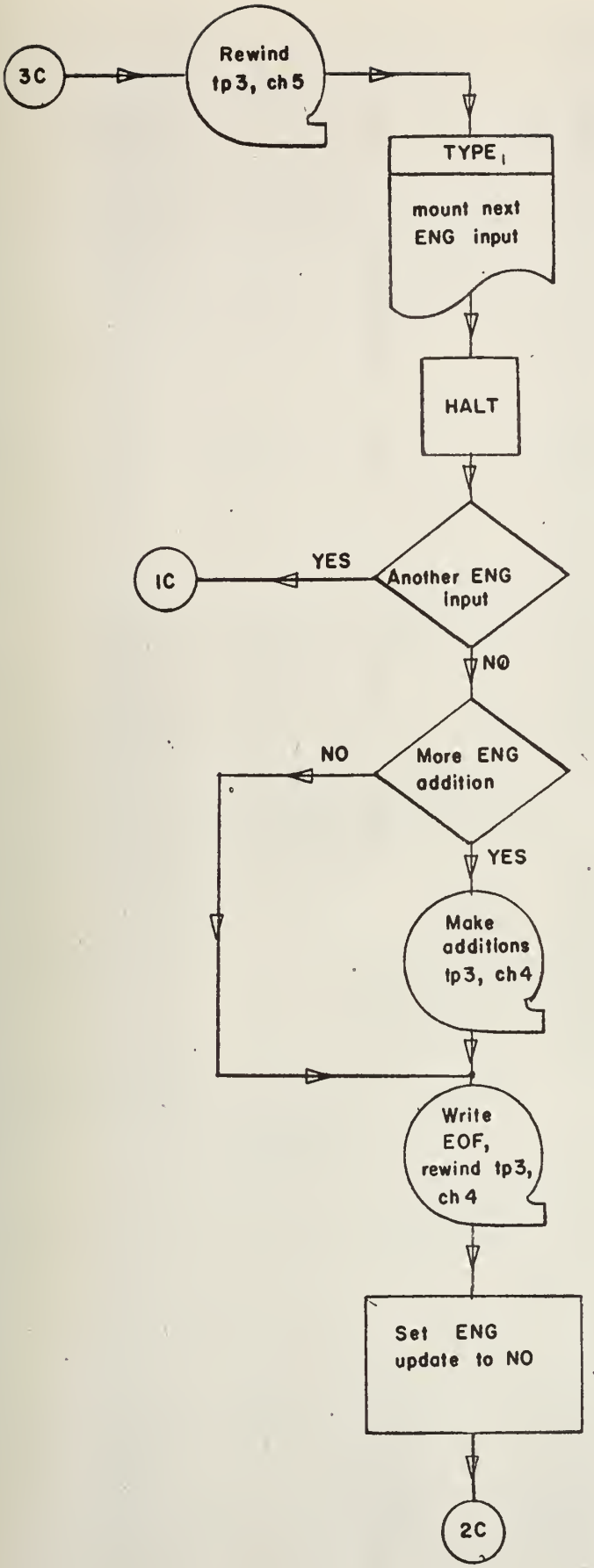
C. No more input tapes

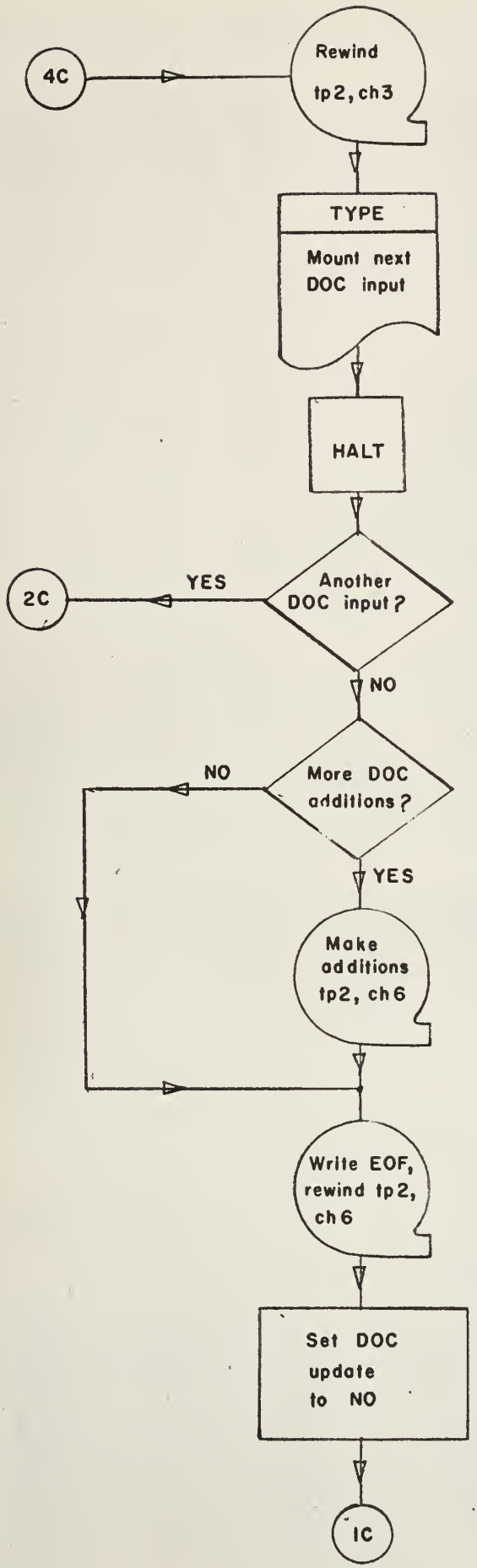
When there are no more input tapes of either kind, all additions not yet added are added and a list of all additions and deletions is printed on the printable output tape, unit 4, Ch. 6. An EOF is placed at the end of the output tapes.

General Flowchart of UPDATE

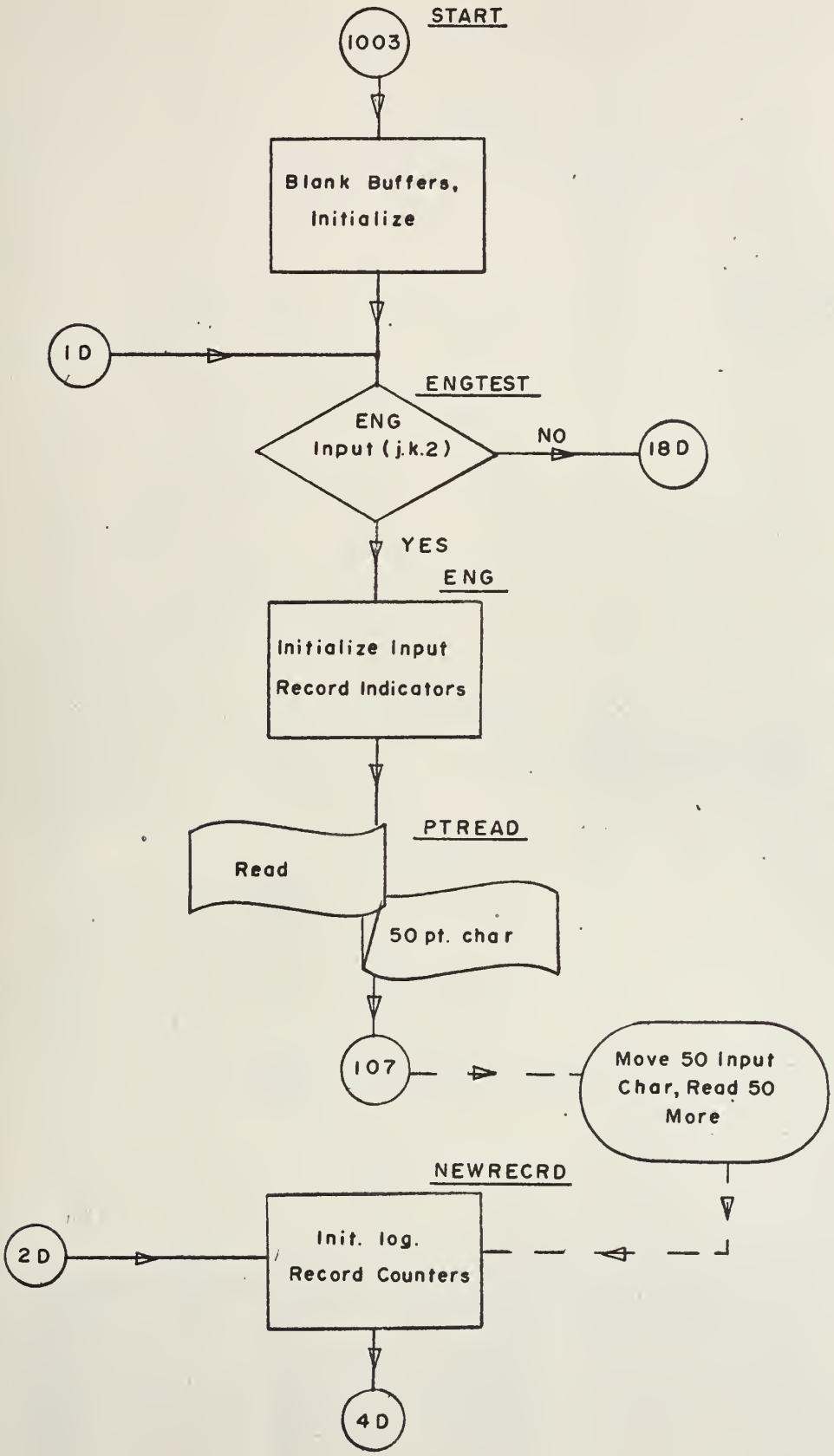


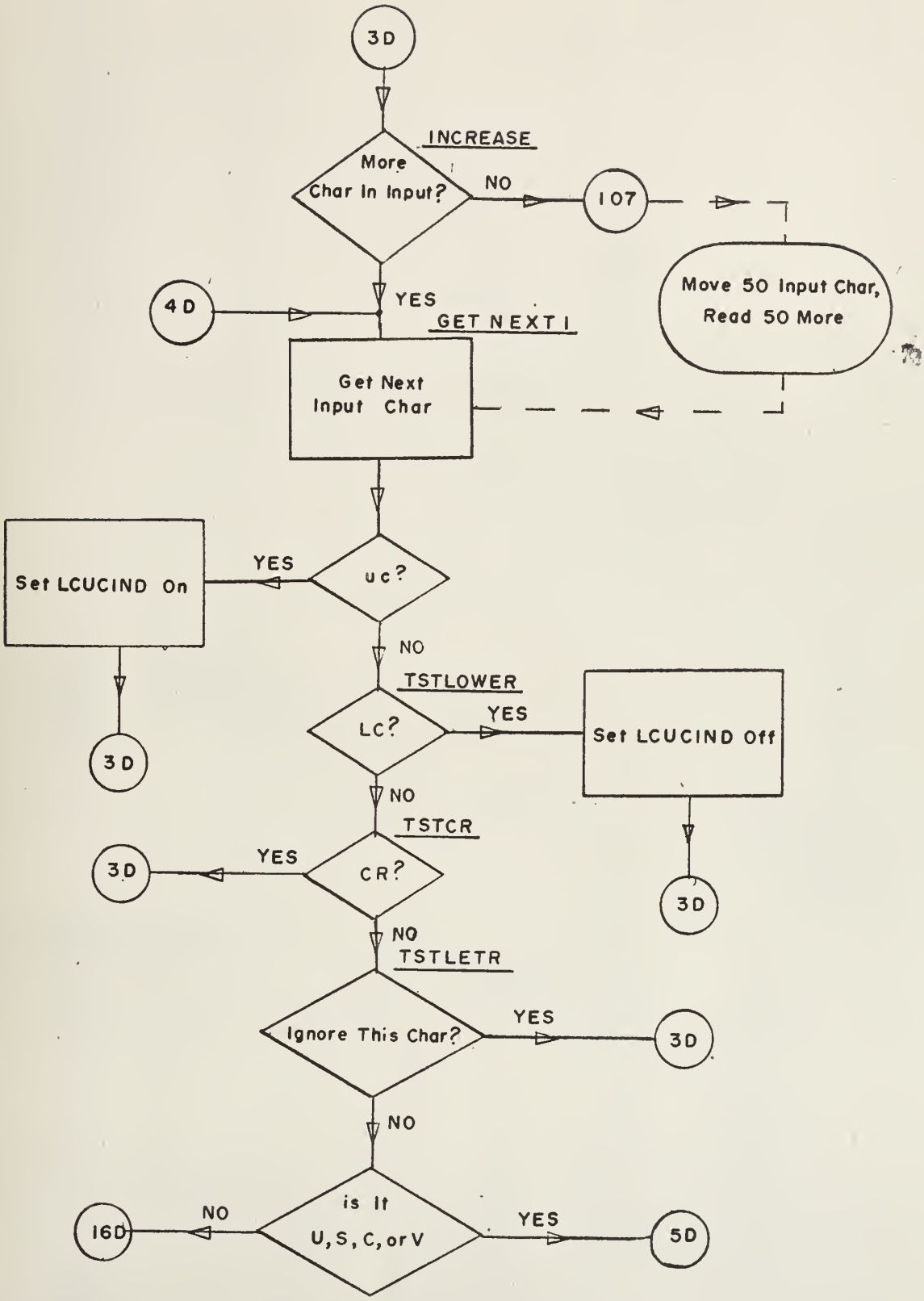

2C
DØC update
NO
YES
Read rec. DOC tp 2, ch 3
EOF?
YES
4C
NO
Write addition tp2, ch6
YES
Add rec. here?
NO
Replace this rec?
YES
Make replacement this rec.
NO
YES
Delete this rec?
NO
Write this rec. tp 2, ch6
IC

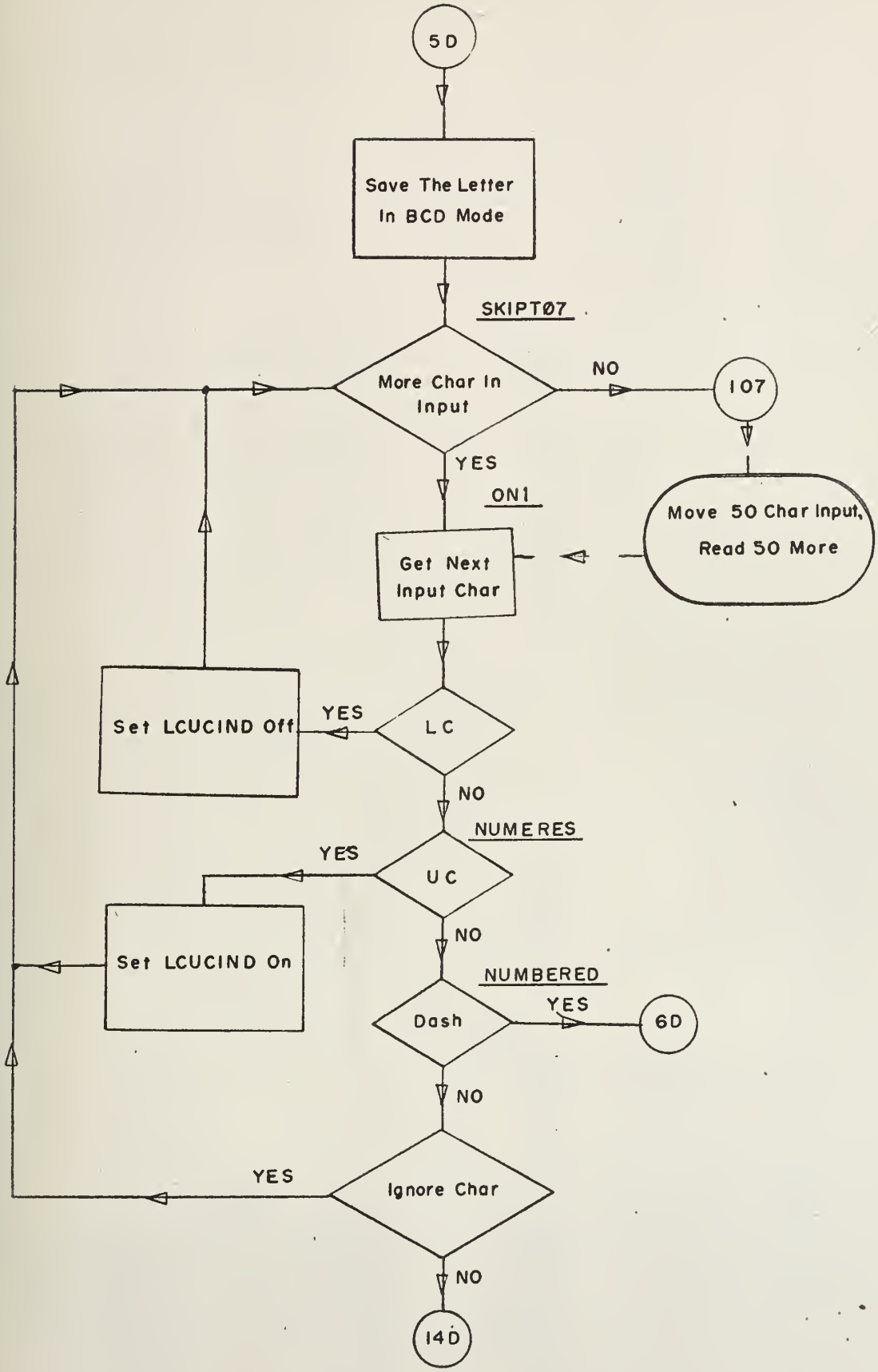

3C
Rewind tp3, ch5
TYPE,
mount next ENG input
HALT
1C
YES
Another ENG input
NO
NO
More ENG addition
YES
Make additions tp3, ch4
Write EOF, rewind tp3, ch4
Set ENG update to NO
2C

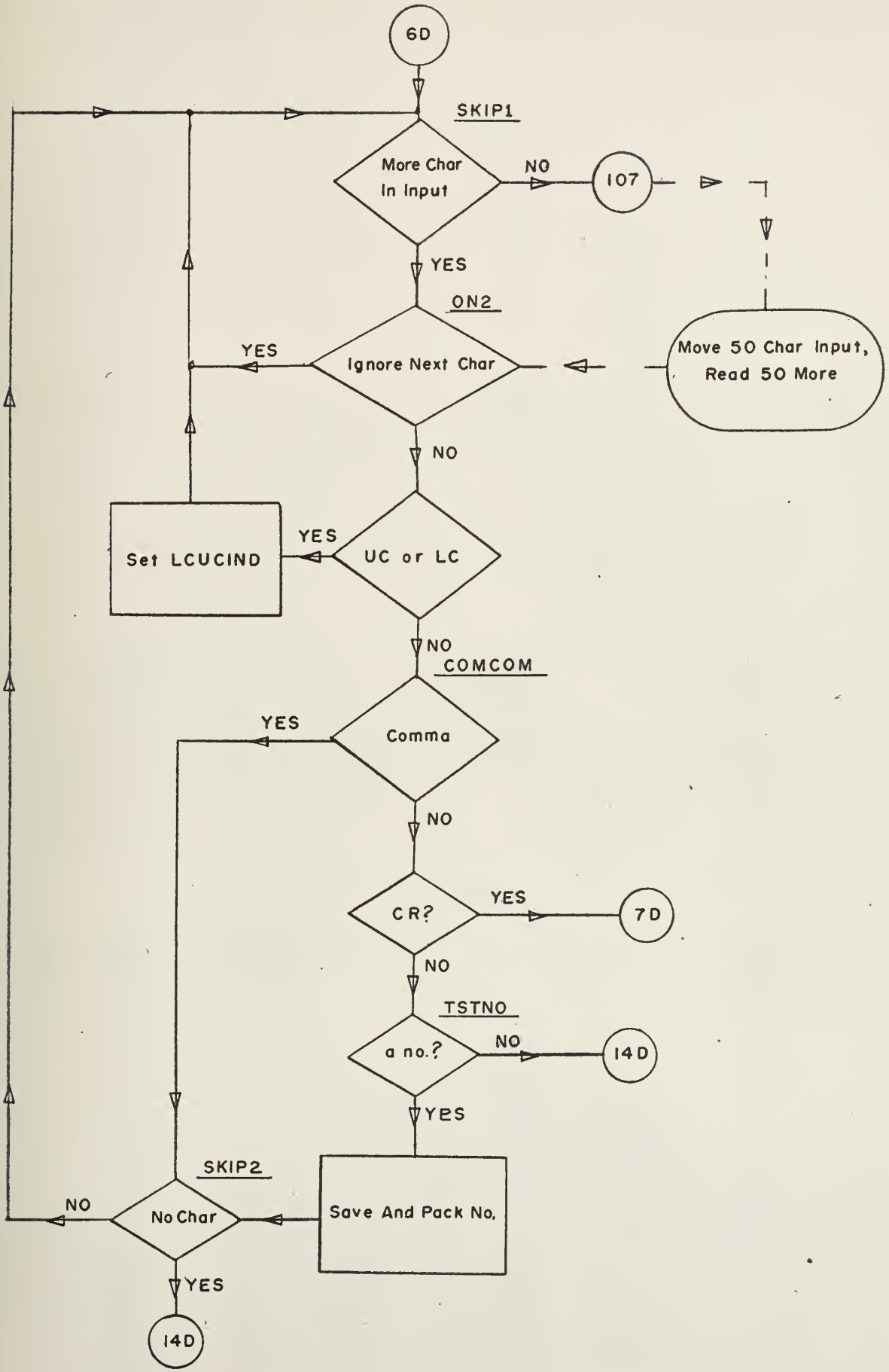

4C
Rewind
tp2, ch3
TYPE
Mount next
DOC input
HALT
2C
YES
Another
DOC input?
NO
NO
More DOC
additions?
YES
Make
additions
tp2, ch6
Write EOF,
rewind tp2,
ch6
Set DOC
update
to NO
1C

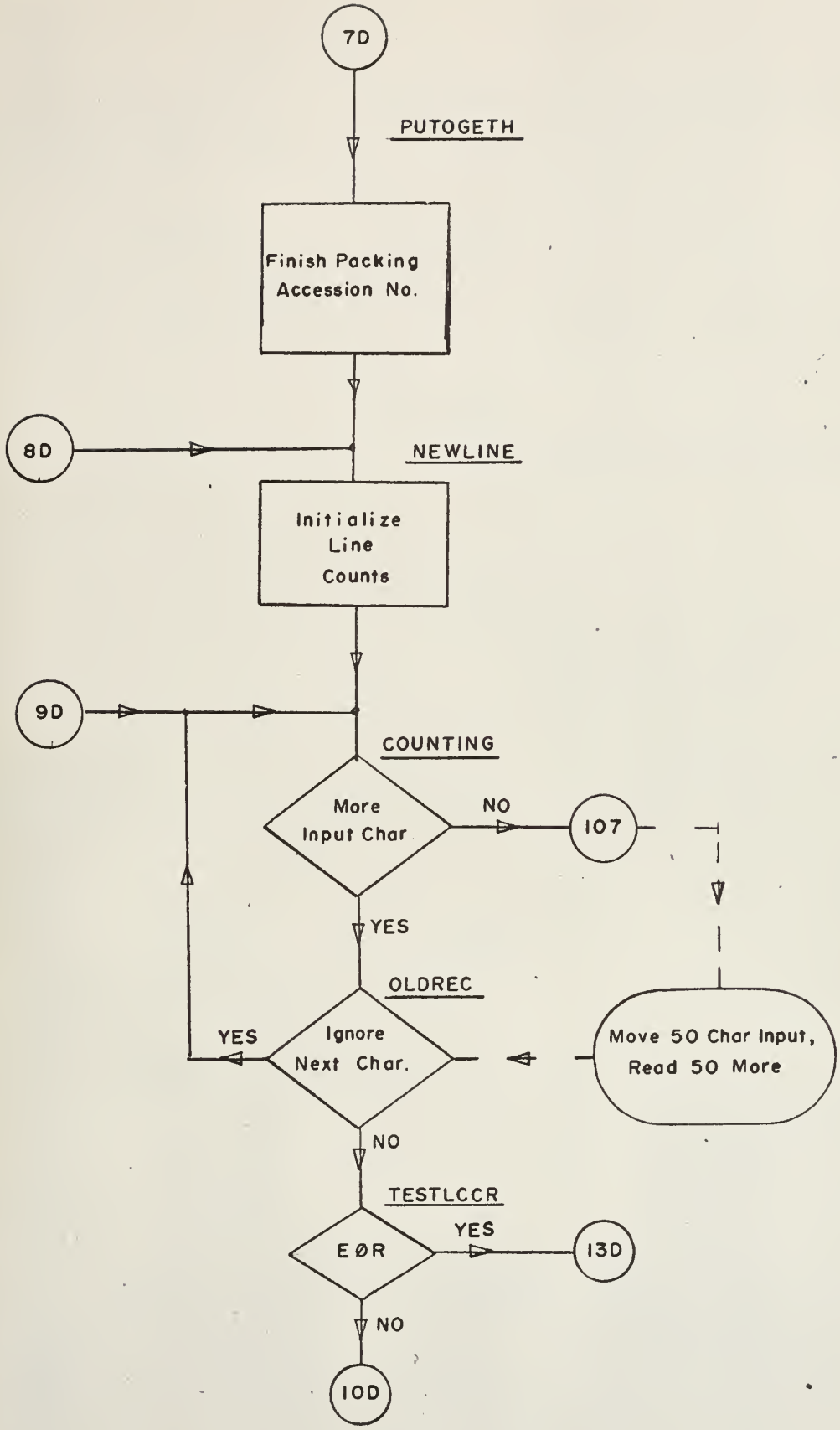
Detailed Flowchart of UPDATE

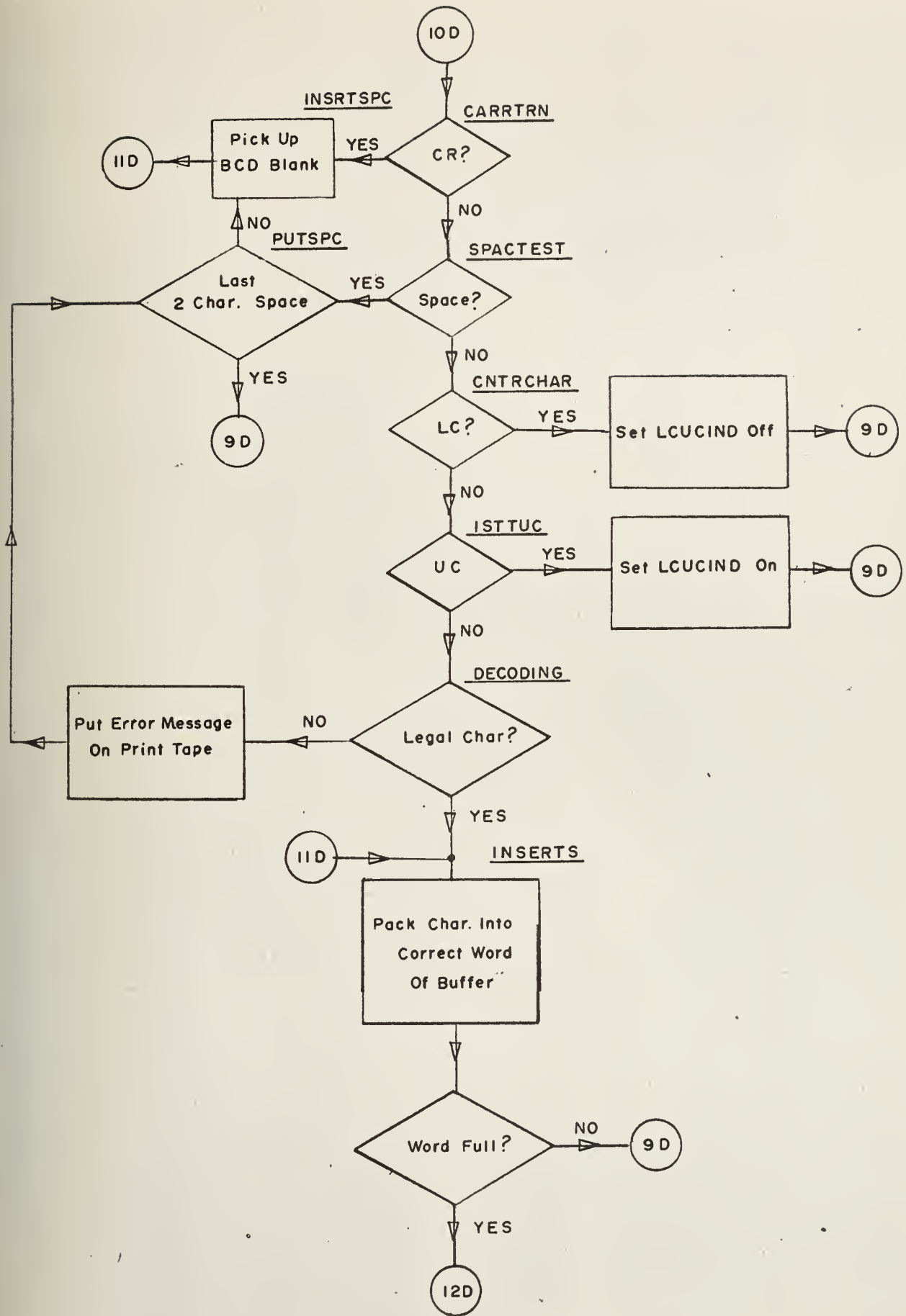


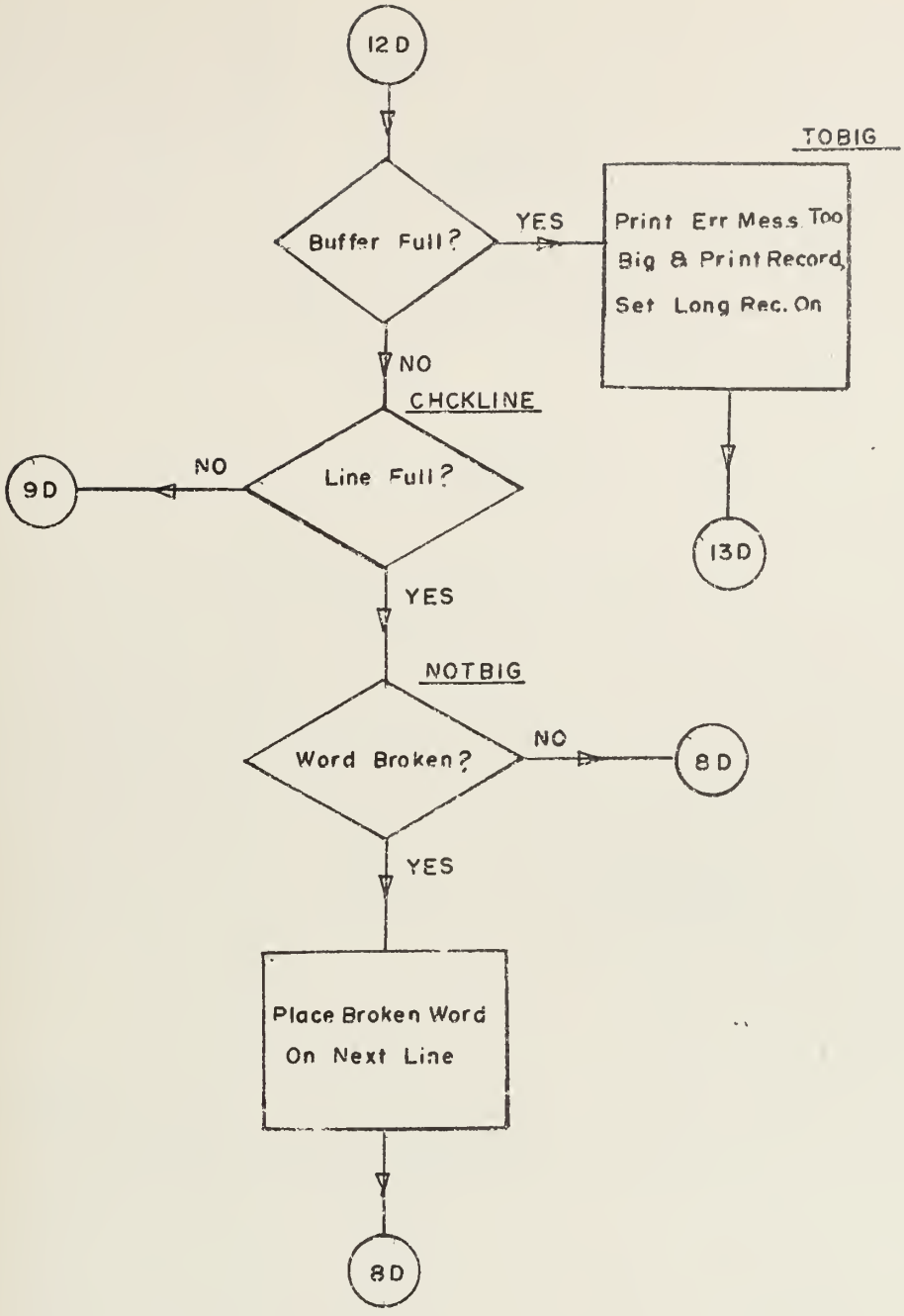

3D
INCREASE
More Char In Input?
NO
107
Move 50 Input Char, Read 50 More
4D
YES
GET NEXT I
Get Next Input Char
Set LCUCIND On
YES
uc?
NO
TSTLOWER
LC?
YES
Set LCUCIND Off
3D
NO
TSTCR
3D
YES
CR?
3D
NO
TSTLETR
Ignore This Char?
YES
3D
NO
16D
NO
is It U, S, C, or V
YES
5D

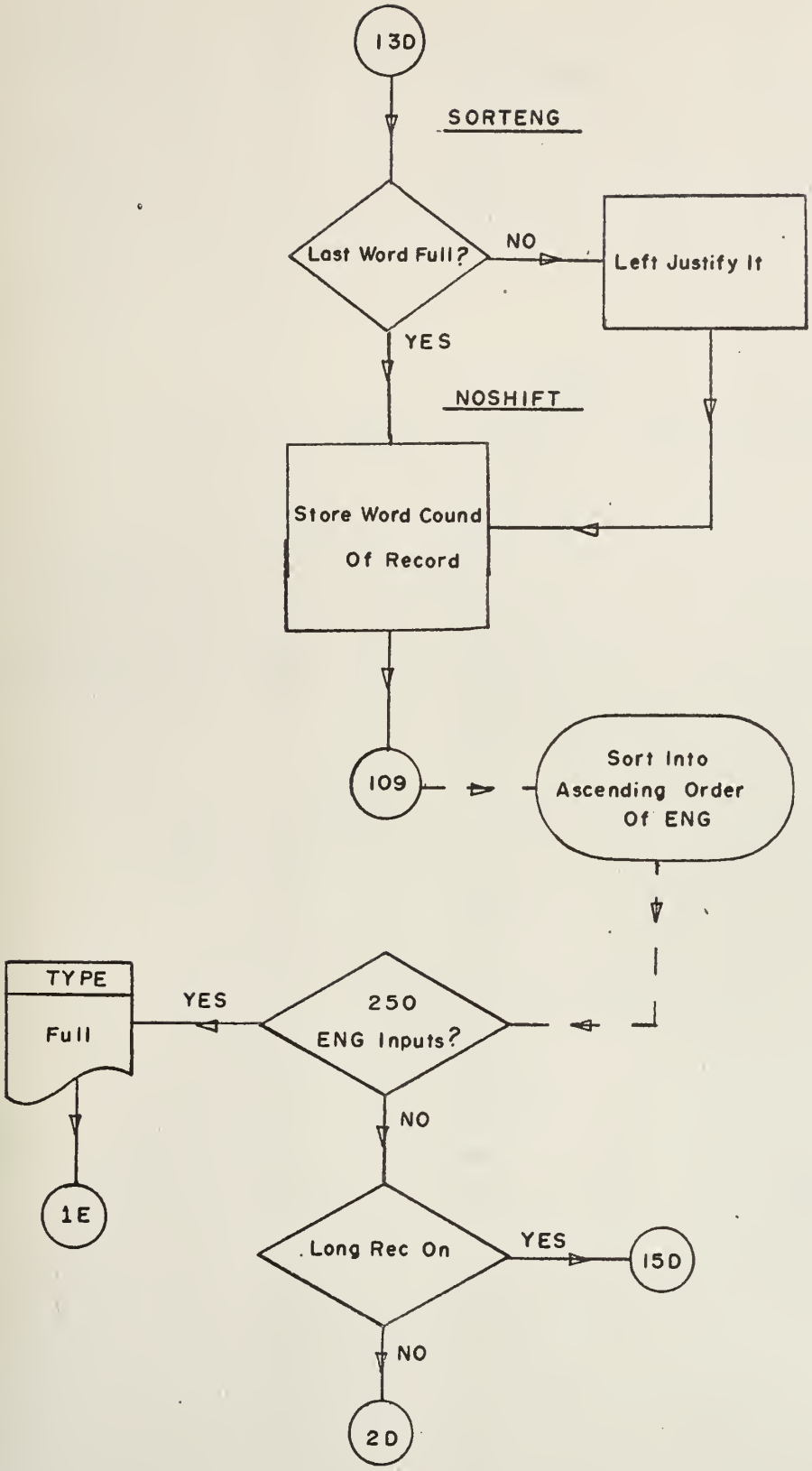

5D
Save The Letter In BCD Mode
SKIPTØ7
More Char In Input
NO
107
YES
ON1
Move 50 Char Input, Read 50 More
Get Next Input Char
Set LCUCIND Off
YES
LC
NO
NUMERES
YES
UC
Set LCUCIND On
NO
NUMBERED
Dash
YES
6D
NO
YES
Ignore Char
NO
14D

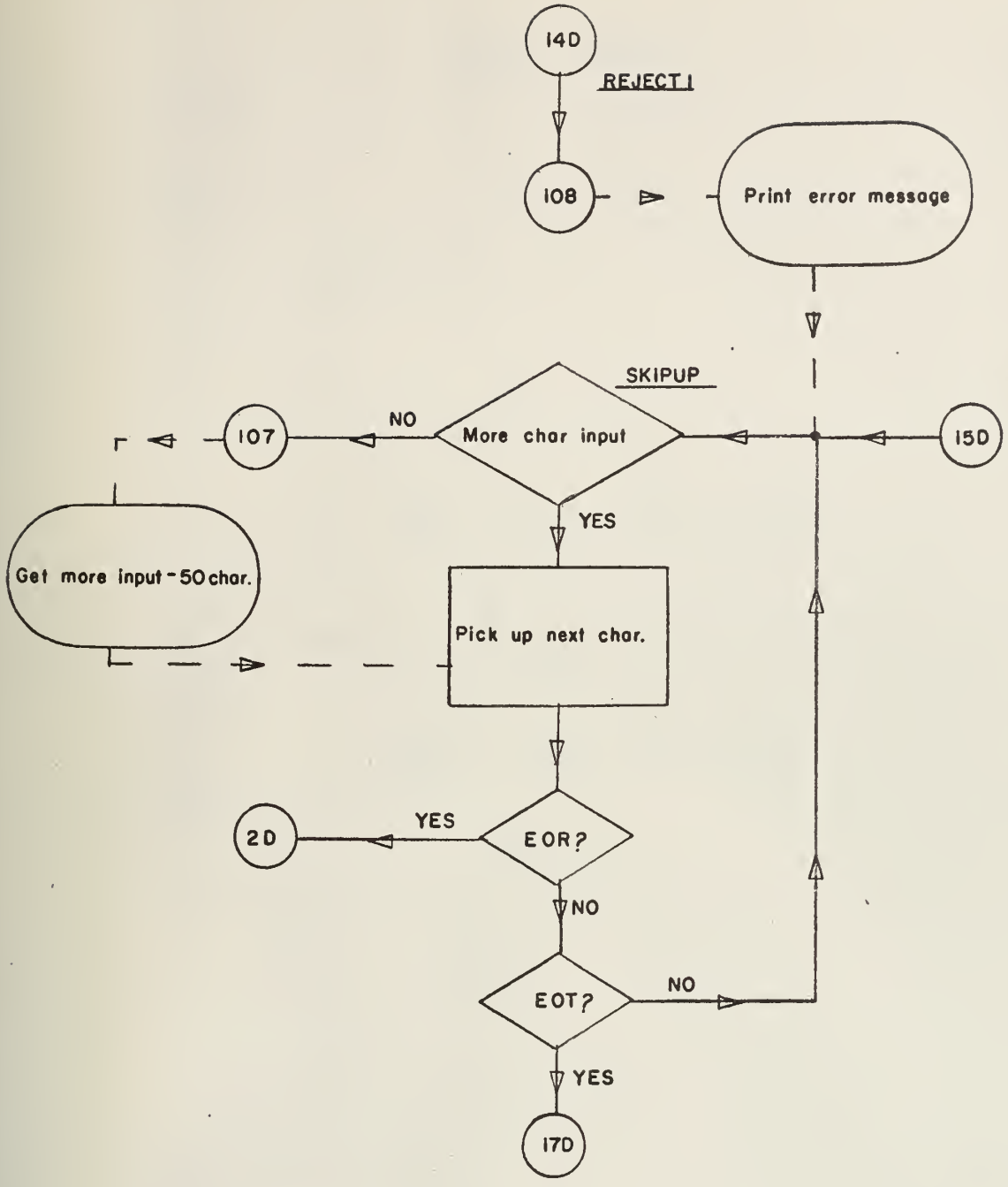

6D
SKIP1
More Char In Input
NO
107
YES
ON2
YES
Ignore Next Char
Move 50 Char Input, Read 50 More
NO
Set LCUCIND
YES
UC or LC
NO
COMCOM
YES
Comma
NO
CR?
YES
7D
NO
TSTNO
a no.?
NO
14D
YES
SKIP2
NO
No Char
Save And Pack No.
YES
14D

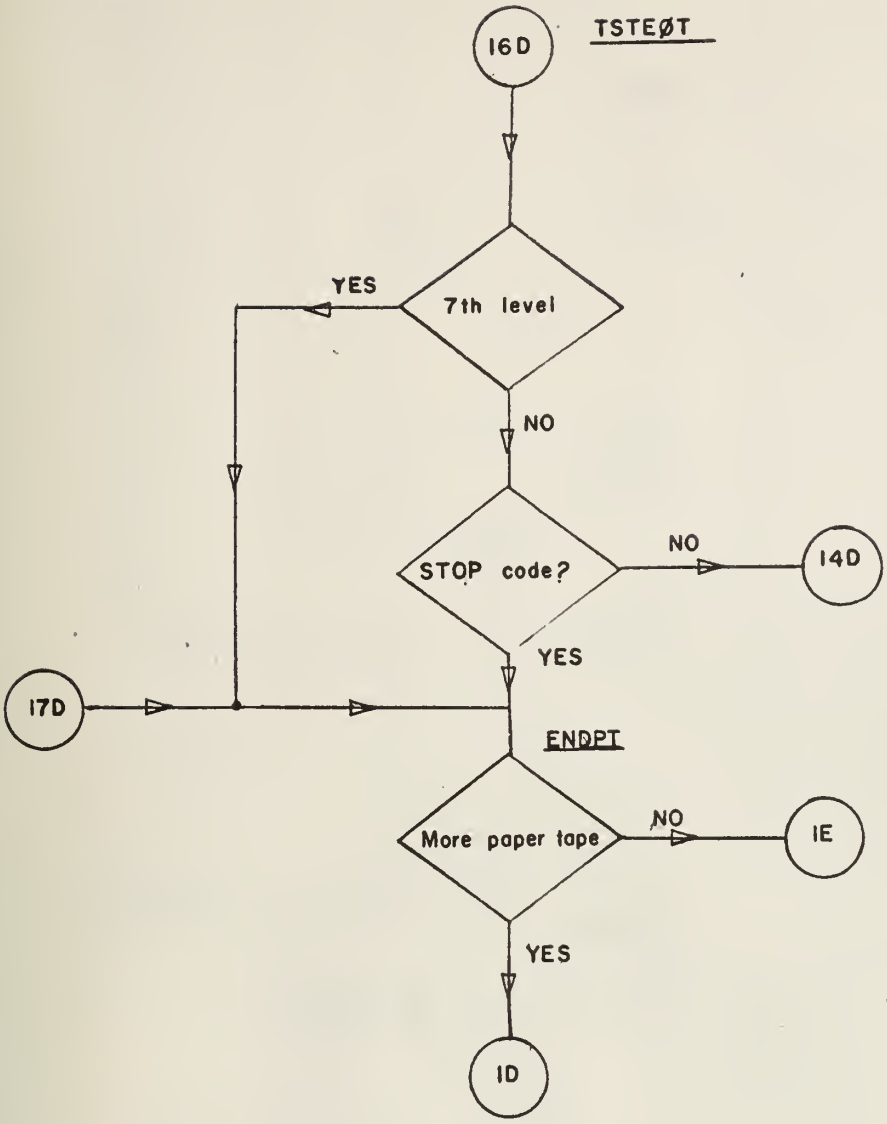

7D
PUTOGETH
Finish Packing Accession No.
8D
NEWLINE
Initialize Line Counts
9D
COUNTING
More Input Char
NO
107
YES
OLDREC
YES
Ignore Next Char.
Move 50 Char Input, Read 50 More
NO
TESTLCCR
EØR
YES
13D
NO
10D

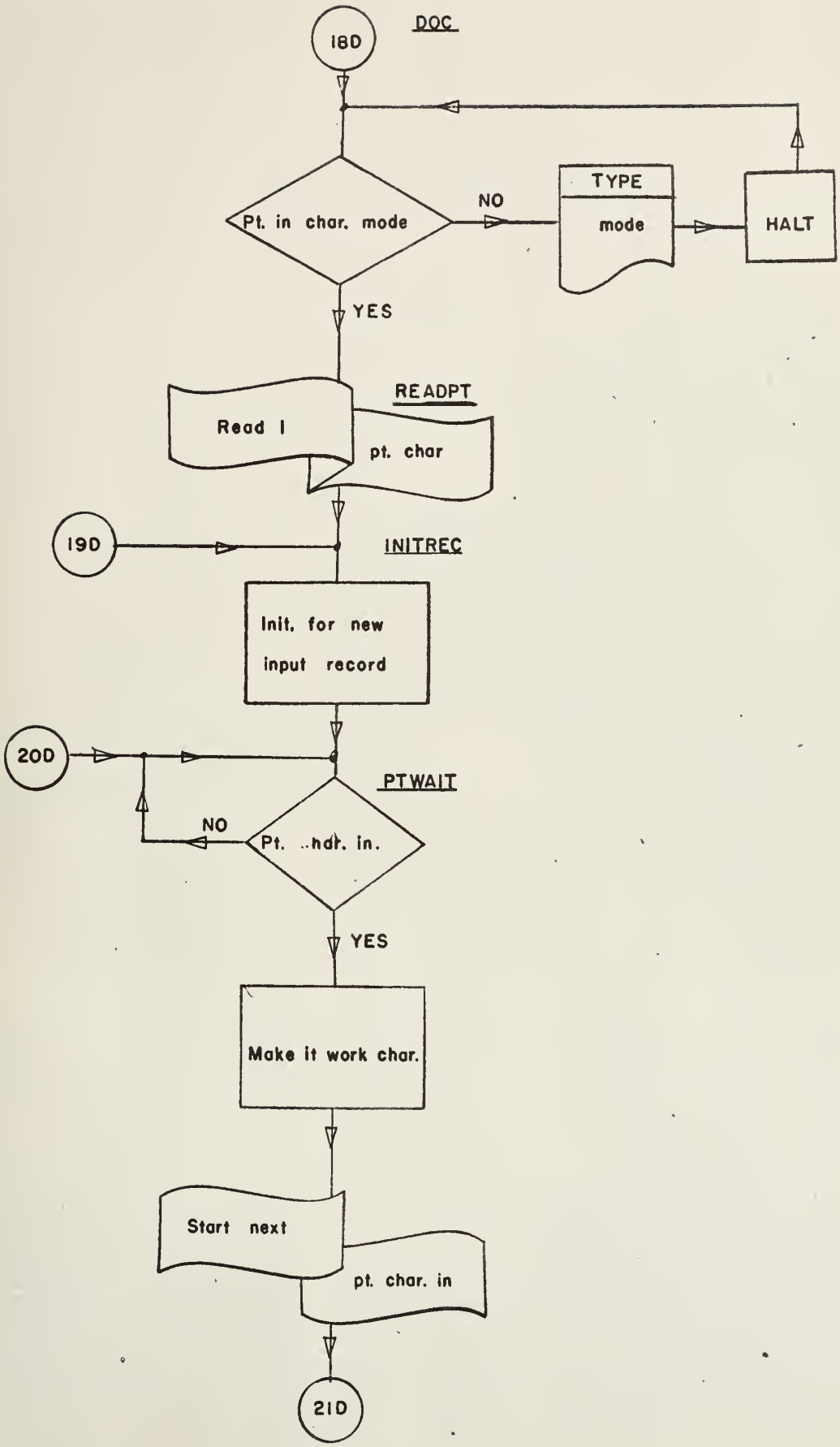

10D
INSRTSPC
CARRTRN
Pick Up BCD Blank
YES
CR?
11D
NO
NO
PUTSPC
SPACTEST
Last 2 Char. Space
YES
Space?
YES
NO
9D
CNTRCHAR
LC?
YES
Set LCUCIND Off
9D
NO
ISTTUC
UC
YES
Set LCUCIND On
9D
NO
DECODING
Put Error Message On Print Tape
NO
Legal Char?
YES
11D
INSERTS
Pack Char. Into Correct Word Of Buffer
Word Full?
NO
9D
YES
12D

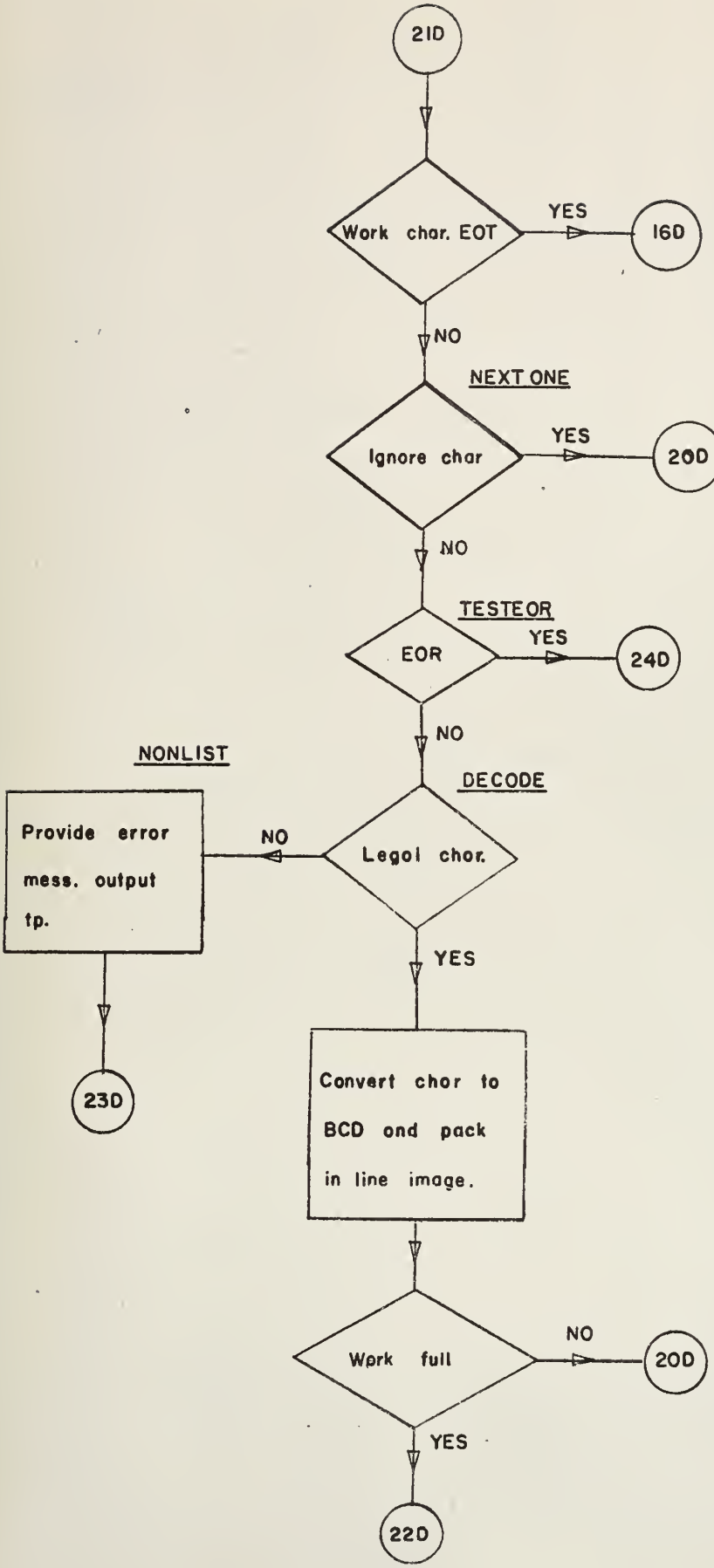

12D
TOBIG
Buffer Full?
YES
Print Err Mess Too Big & Print Record, Set Long Rec. On
NO
CHCKLINE
9D
NO
Line Full?
13D
YES
NOTBIG
Word Broken?
NO
8D
YES
Place Broken Word On Next Line
8D

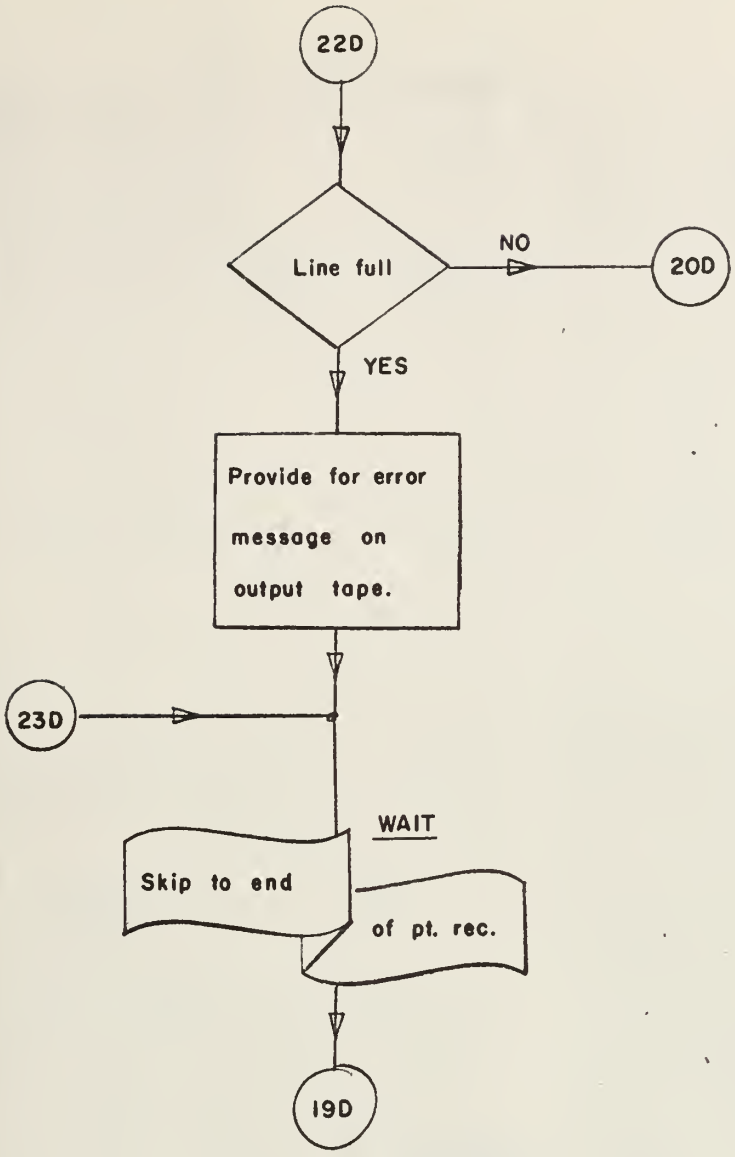

13D
SORTENG
Last Word Full?
NO
Left Justify It
YES
NOSHIFT
Store Word Cound
Of Record
109
Sort Into
Ascending Order
Of ENG
TYPE
Full
YES
250
ENG Inputs?
NO
1E
Long Rec On
YES
15D
NO
2D

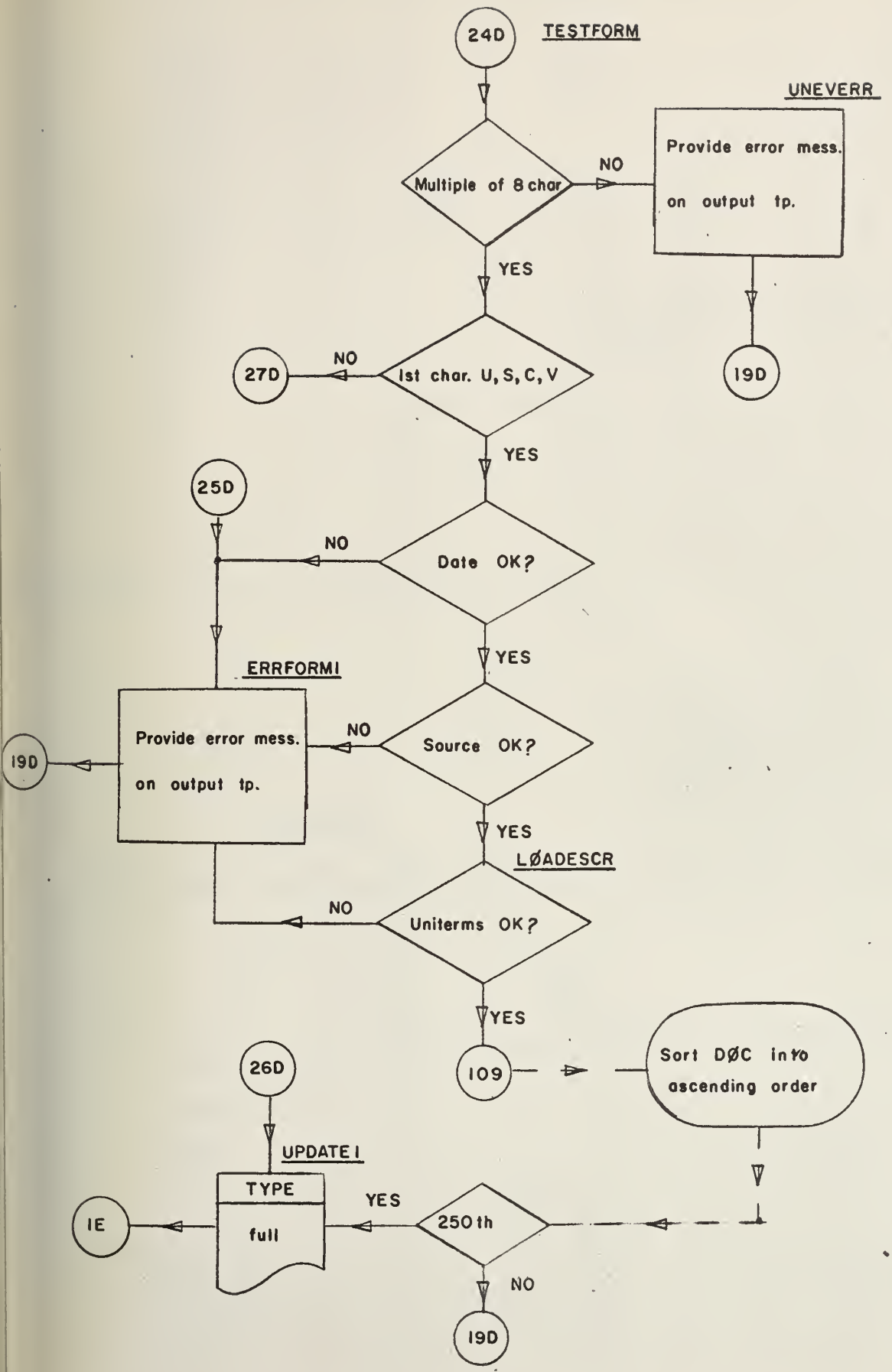

14D
REJECT1
108
Print error message
SKIPUP
More char input
NO
107
15D
YES
Get more input - 50 char.
Pick up next char.
EOR?
YES
2D
NO
EOT?
NO
YES
17D

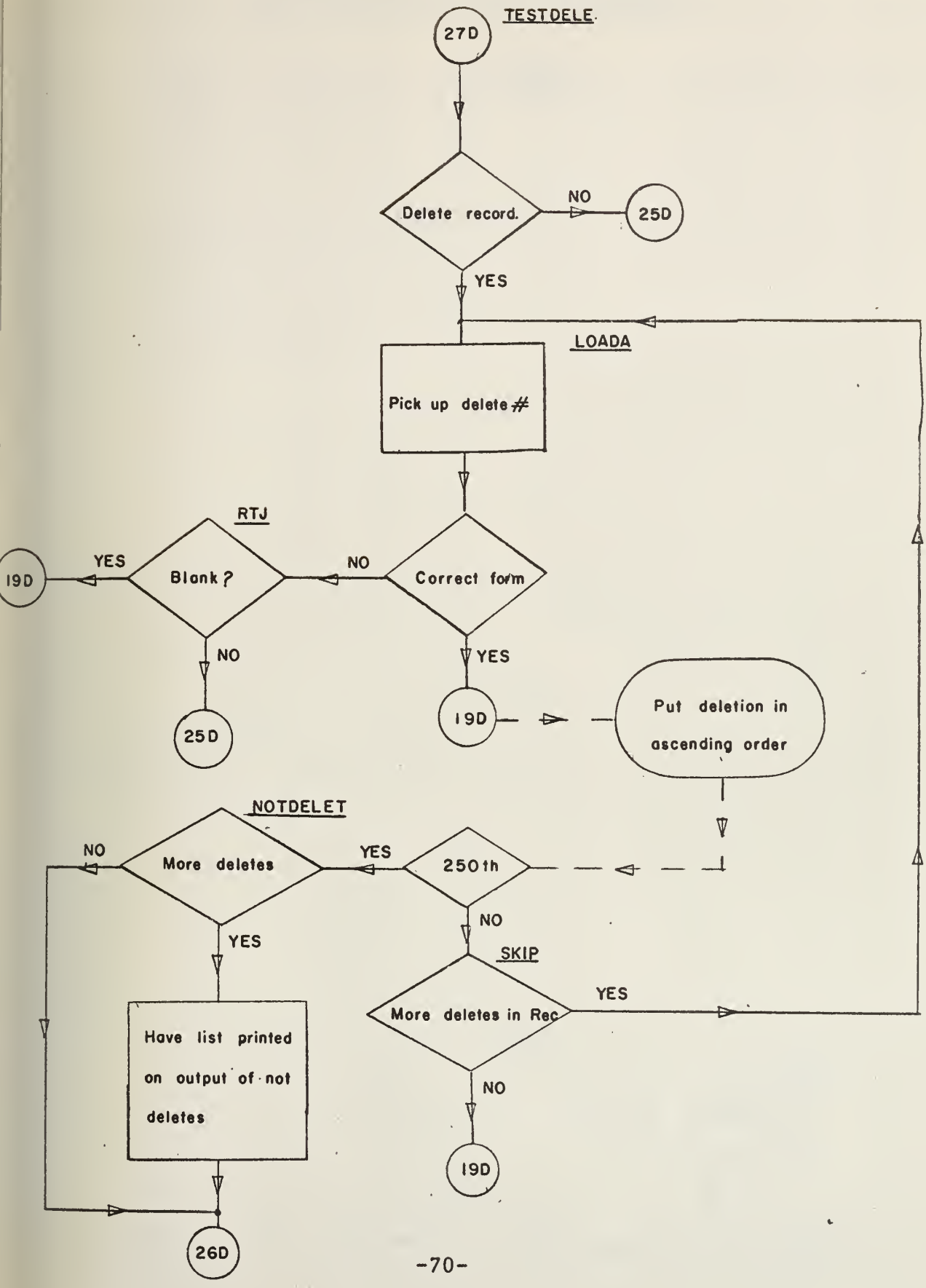

16D
TSTEØT
YES
7th level
NO
STOP code?
NO
14D
YES
17D
ENDPT
More paper tape
NO
1E
YES
1D


180
DOC
Pt. in char. mode
NO
TYPE
mode
HALT
YES
READPT
Read 1
pt. char
190
INITREC
Init. for new
input record
200
PTWAIT
NO
Pt. ..hdr. in.
YES
Make it work char.
Start next
pt. char. in
210

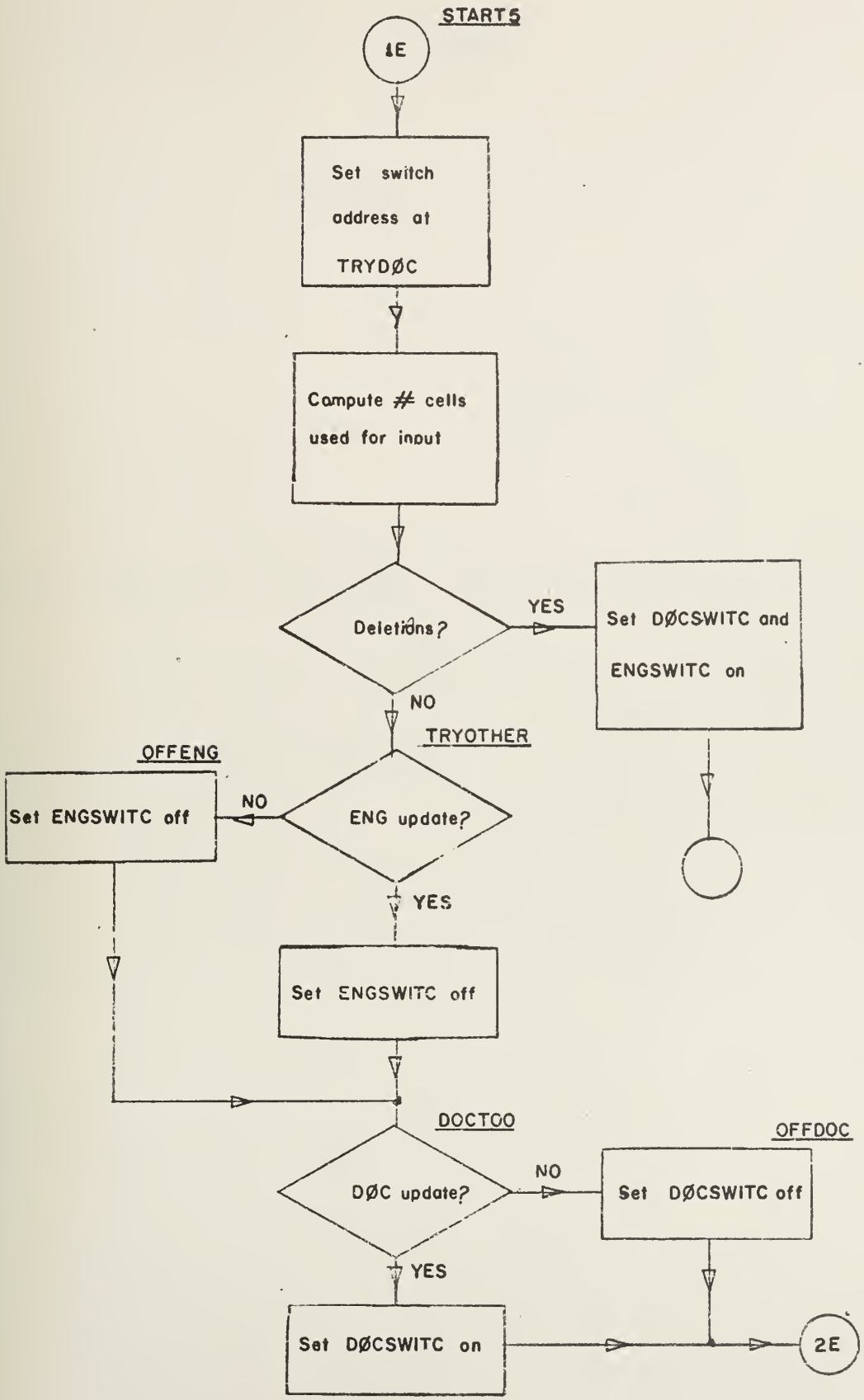

21D
Work char. EOT
YES
16D
NO
NEXT ONE
Ignore char
YES
20D
NO
TESTEOR
EOR
YES
24D
NO
NONLIST
DECODE
Provide error mess. output tp.
NO
Legal char.
YES
23D
Convert char to BCD and pack in line image.
Work full
NO
20D
YES
22D

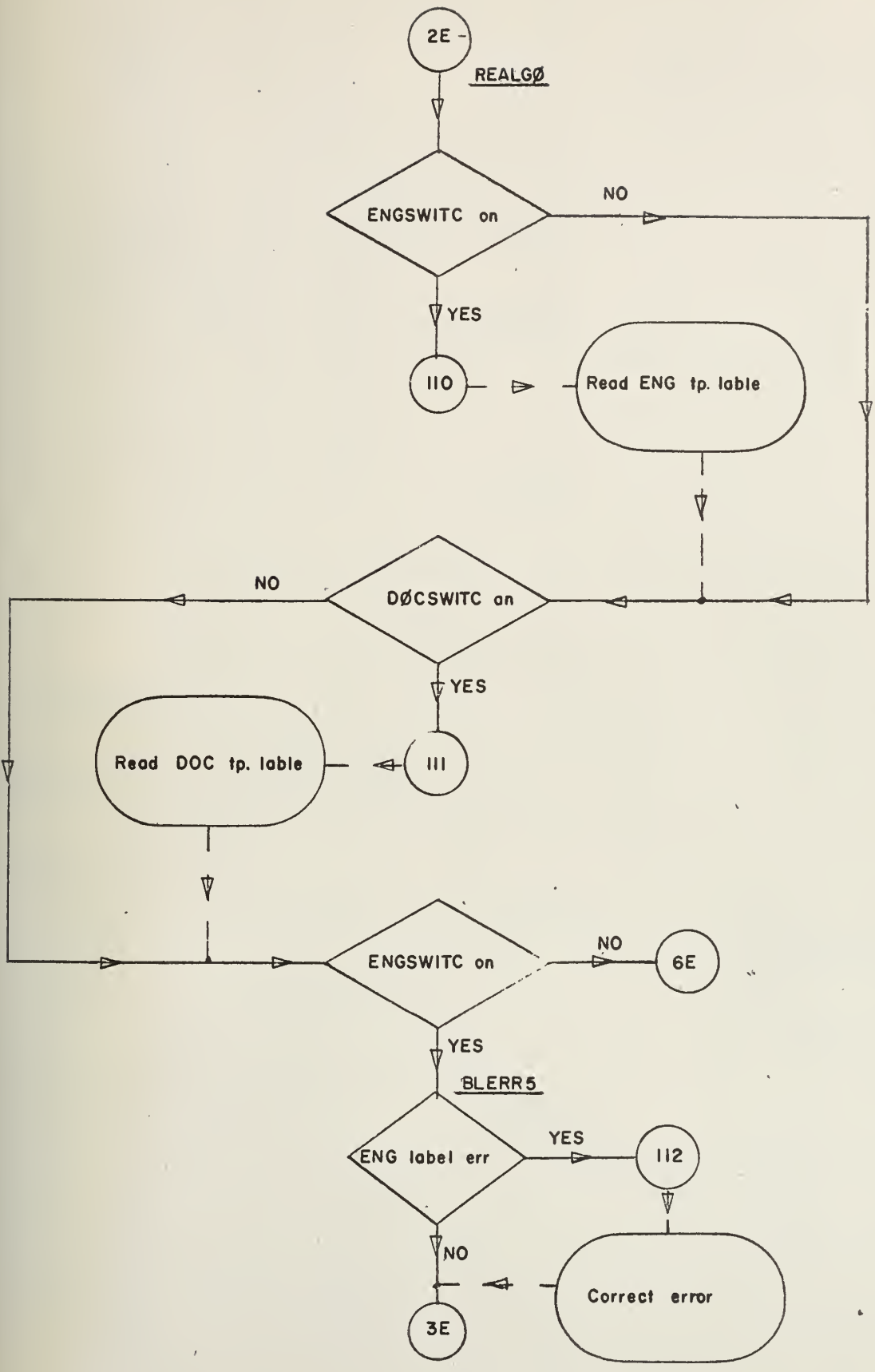

22D
Line full
NO
20D
YES
Provide for error message on output tape.
23D
WAIT
Skip to end
of pt. rec.
19D

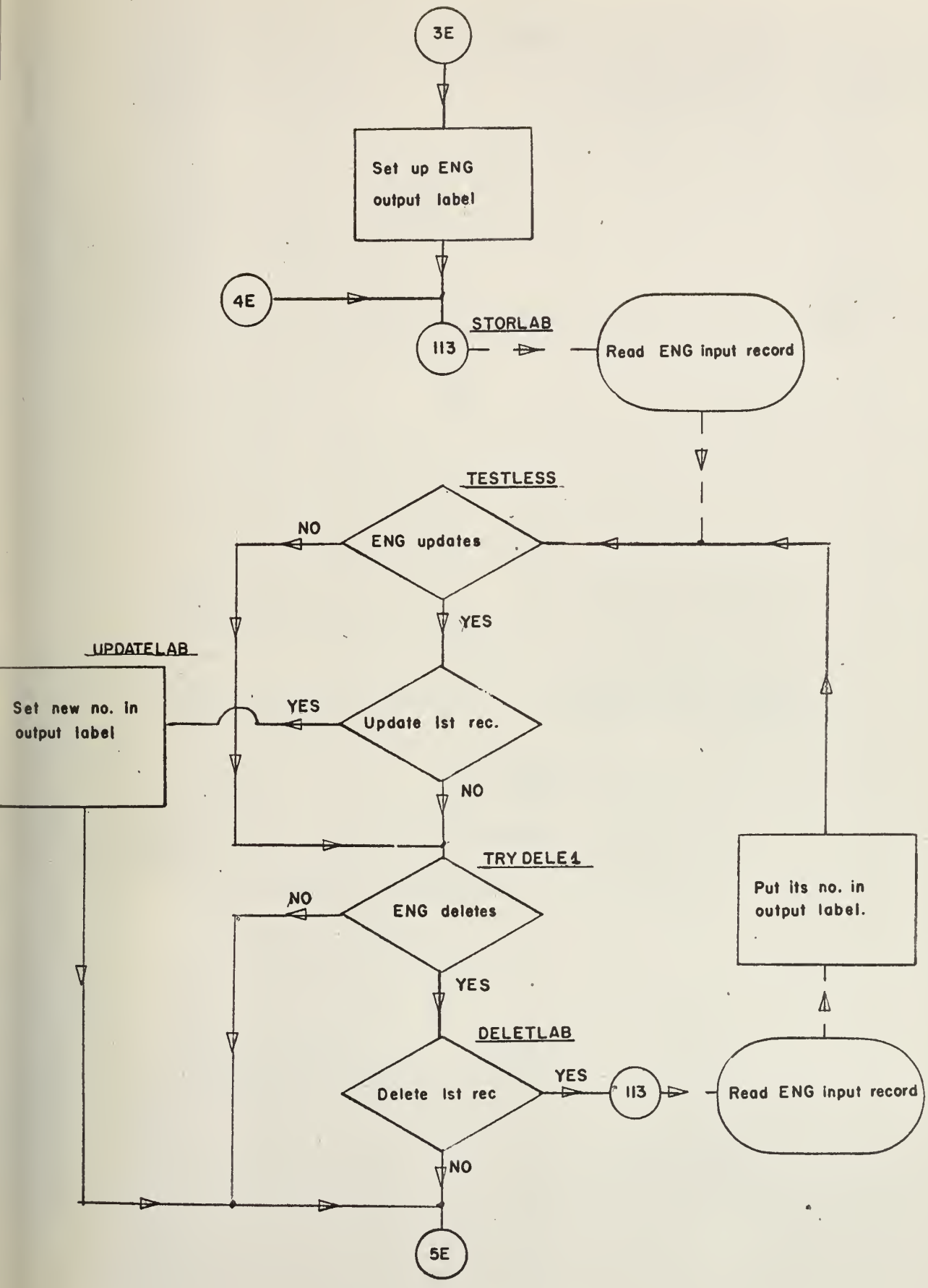

24D
TESTFORM
UNEVERR
Multiple of 8 char
NO
Provide error mess. on output tp.
YES
27D
NO
1st char. U, S, C, V
19D
YES
25D
NO
Date OK?
YES
ERRFORMI
Provide error mess. on output tp.
19D
NO
Source OK?
YES
LØADESCR
NO
Uniterms OK?
YES
109
Sort DØC in to ascending order
26D
UPDATE I
TYPE
full
1E
YES
250th
NO
19D

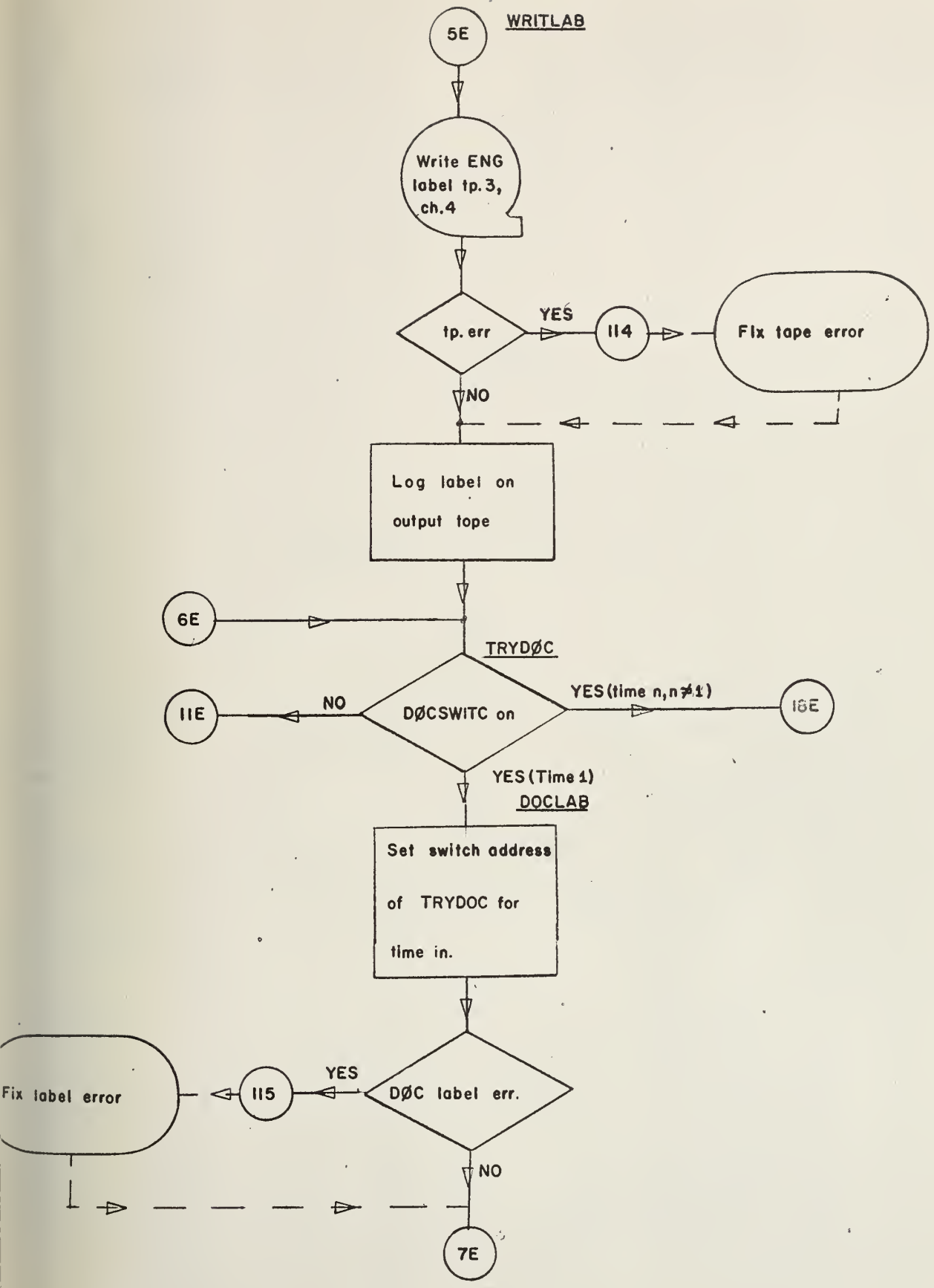

TESTDELE
27D
Delete record.
NO
25D
YES
LOADA
Pick up delete #
RTJ
Correct form
NO
Blank?
YES
19D
NO
25D
YES
19D
Put deletion in ascending order
NOTDELET
More deletes
NO
YES
250th
YES
NO
SKIP
More deletes in Rec
YES
NO
19D
Have list printed on output of not deletes
26D

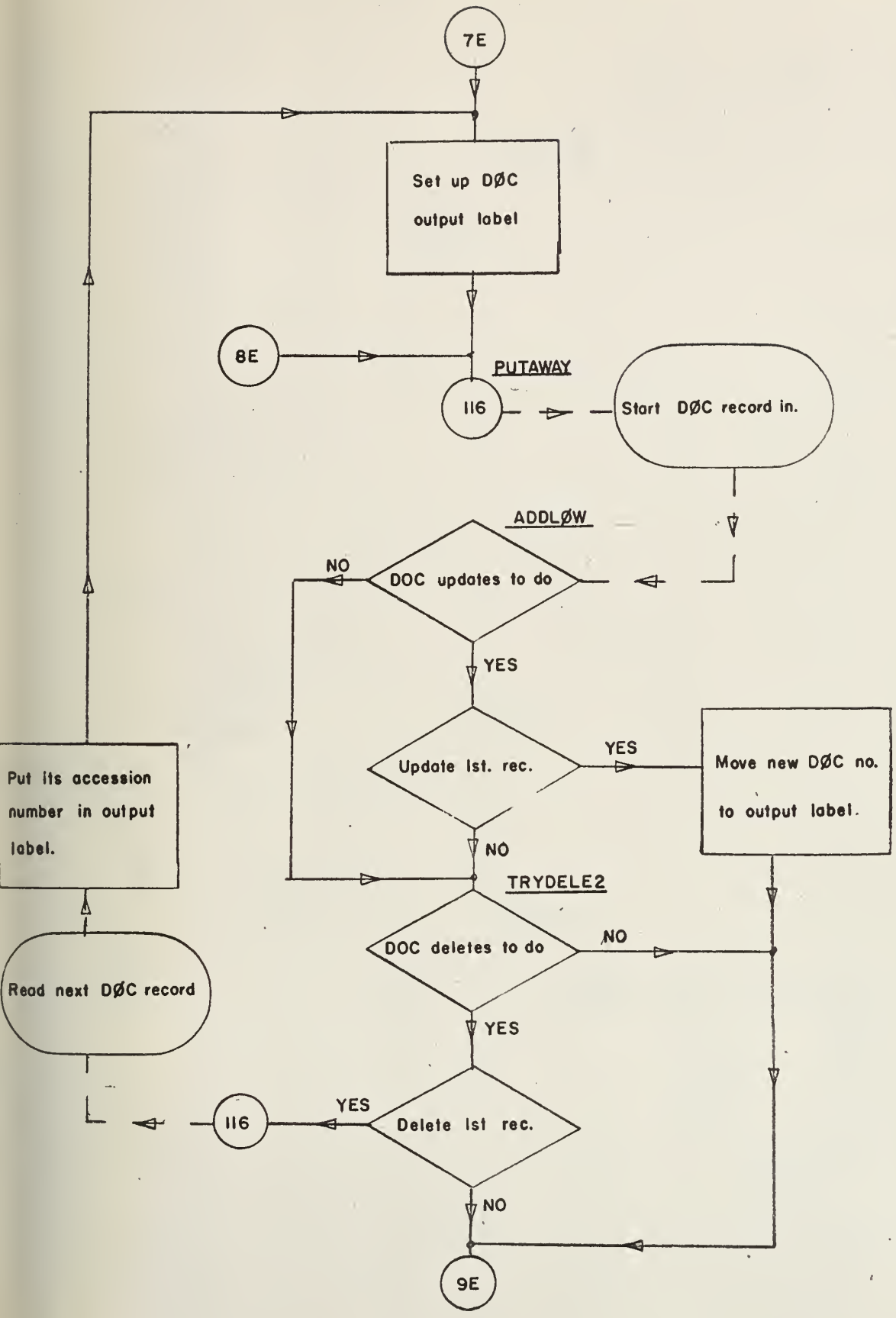
DETAILED ACTUAL UPDATE

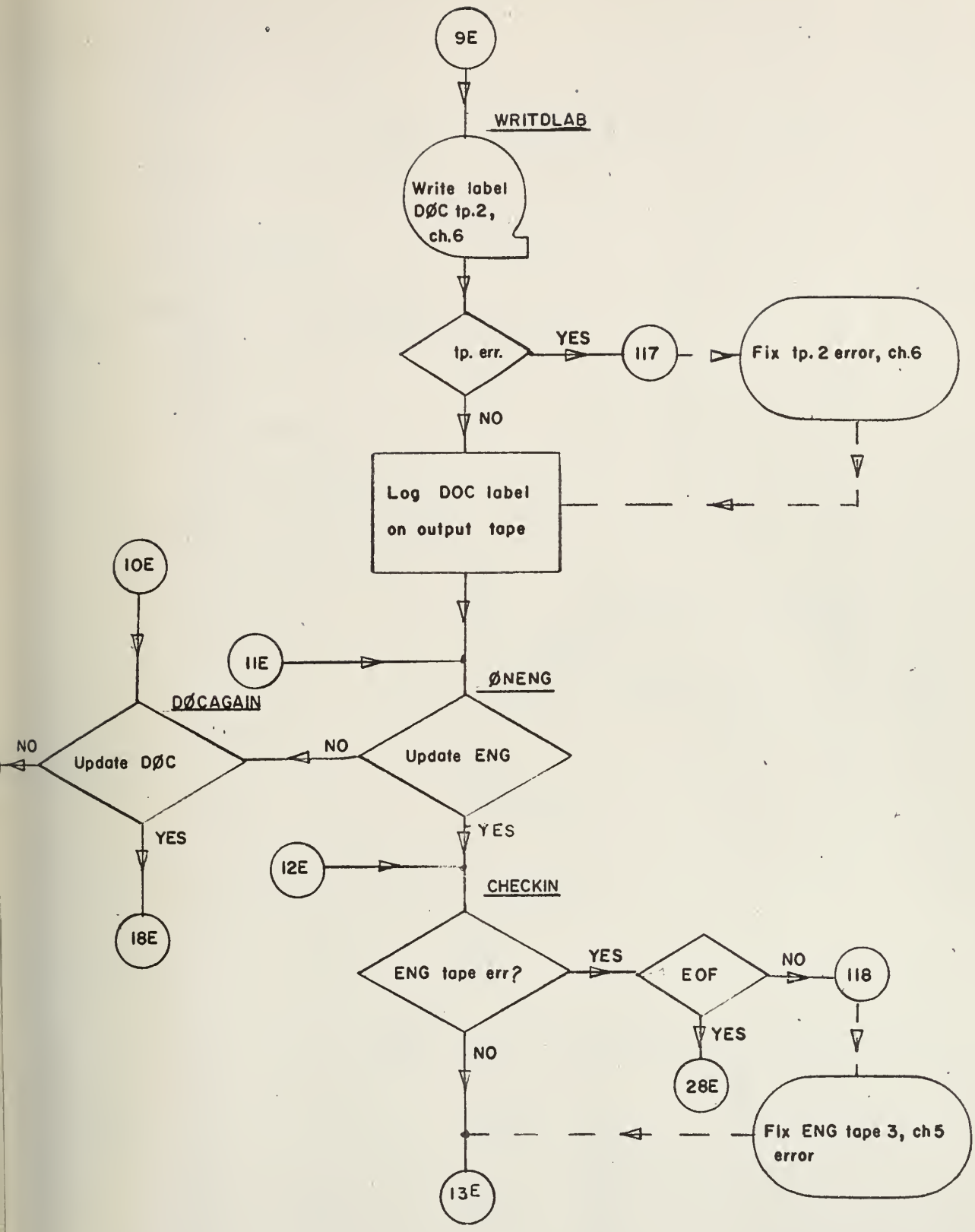


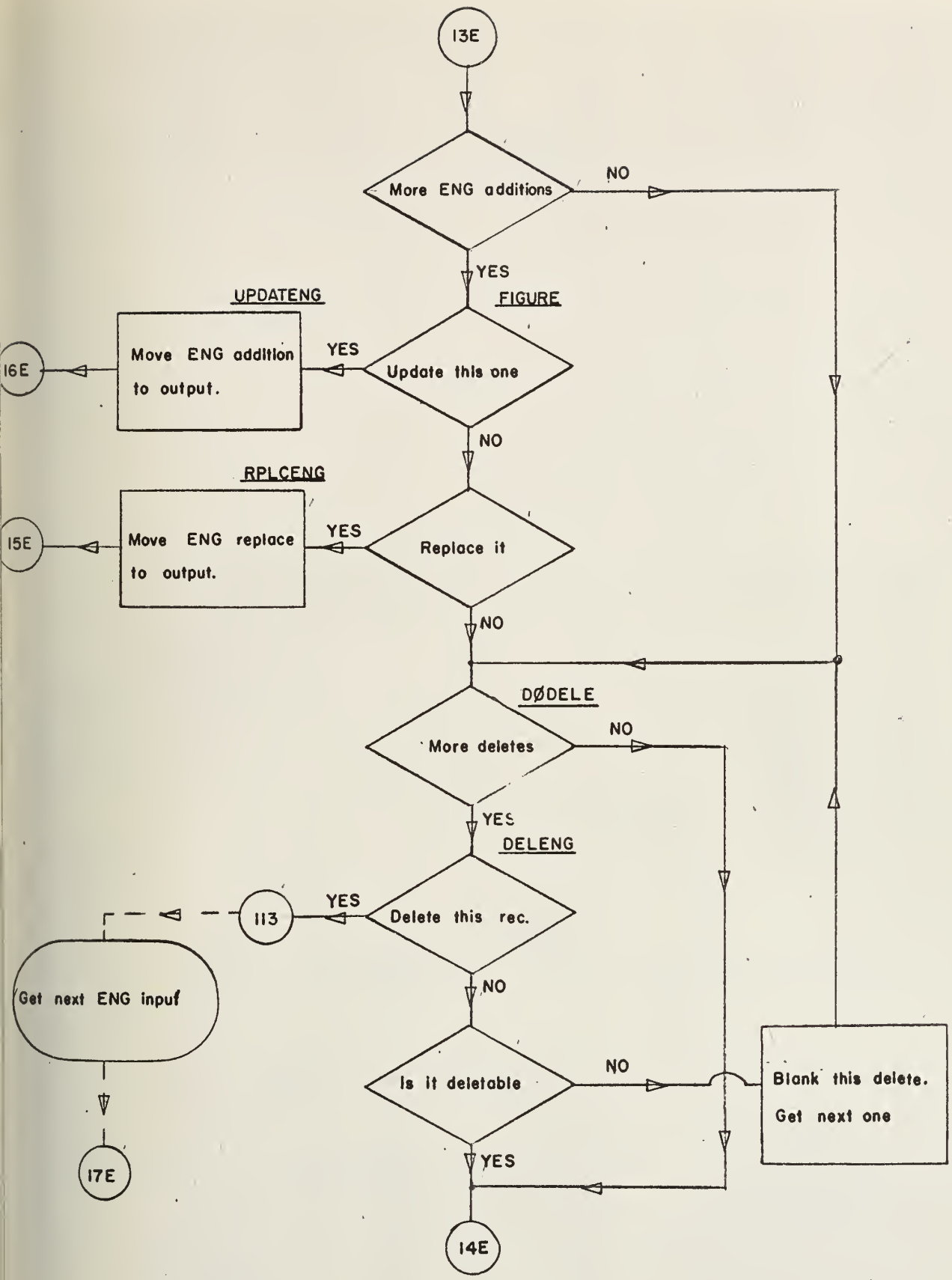

2E -
REALGØ
ENGSWITC on
NO
YES
110
Read ENG tp. lable
NO
DØCSWITC an
YES
Read DOC tp. lable
111
ENGSWITC on
NO
6E
YES
BLERR5
ENG label err
YES
112
NO
Correct error
3E

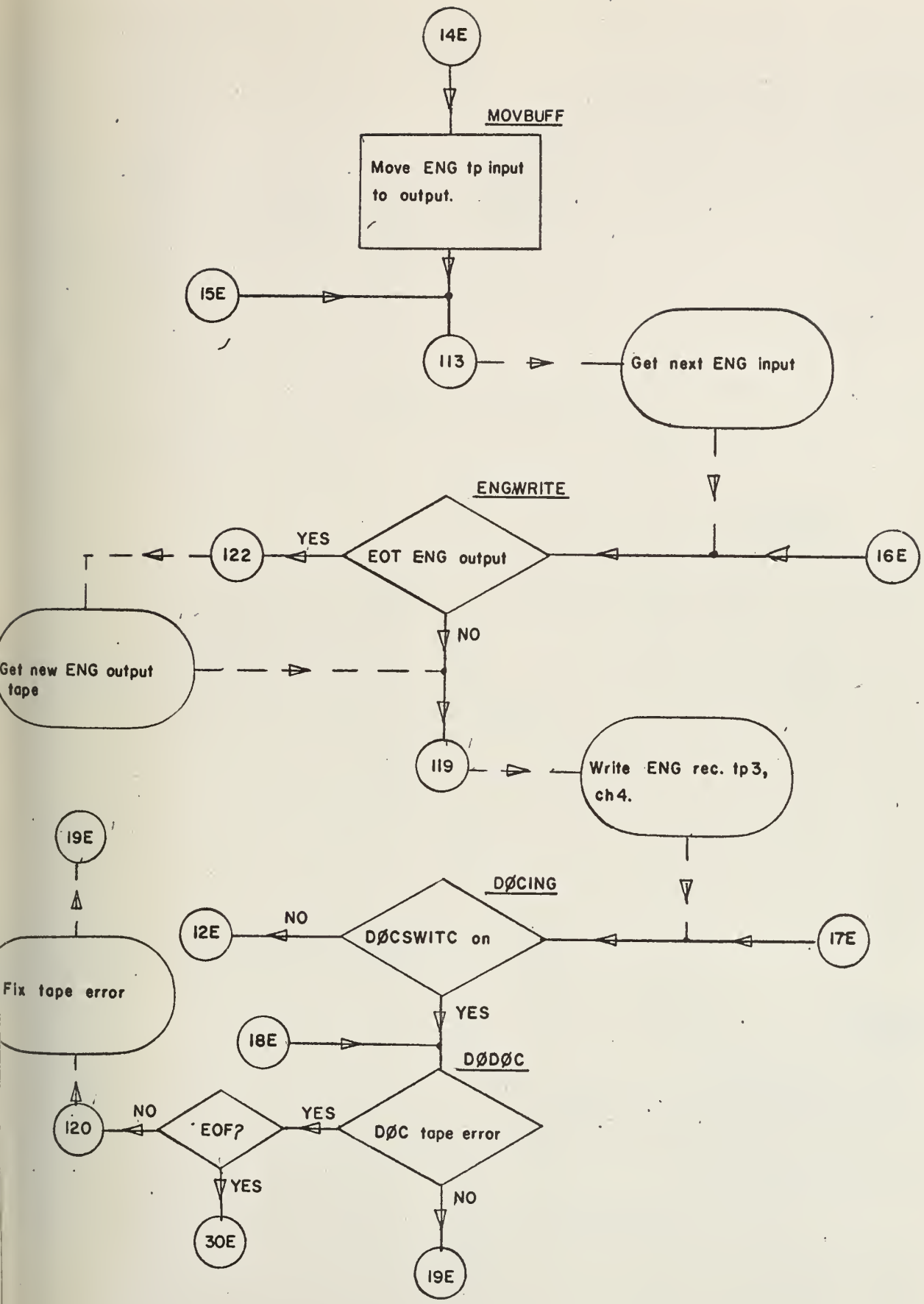

3E
Set up ENG output label
4E
STORLAB
113
Read ENG input record
TESTLESS
NO
ENG updates
YES
UPDATELAB
Set new no. in output label
YES
Update 1st rec.
NO
TRY DELE1
NO
ENG deletes
YES
DELETLAB
Delete 1st rec
YES
113
Read ENG input record
Put its no. in output label.
NO
5E

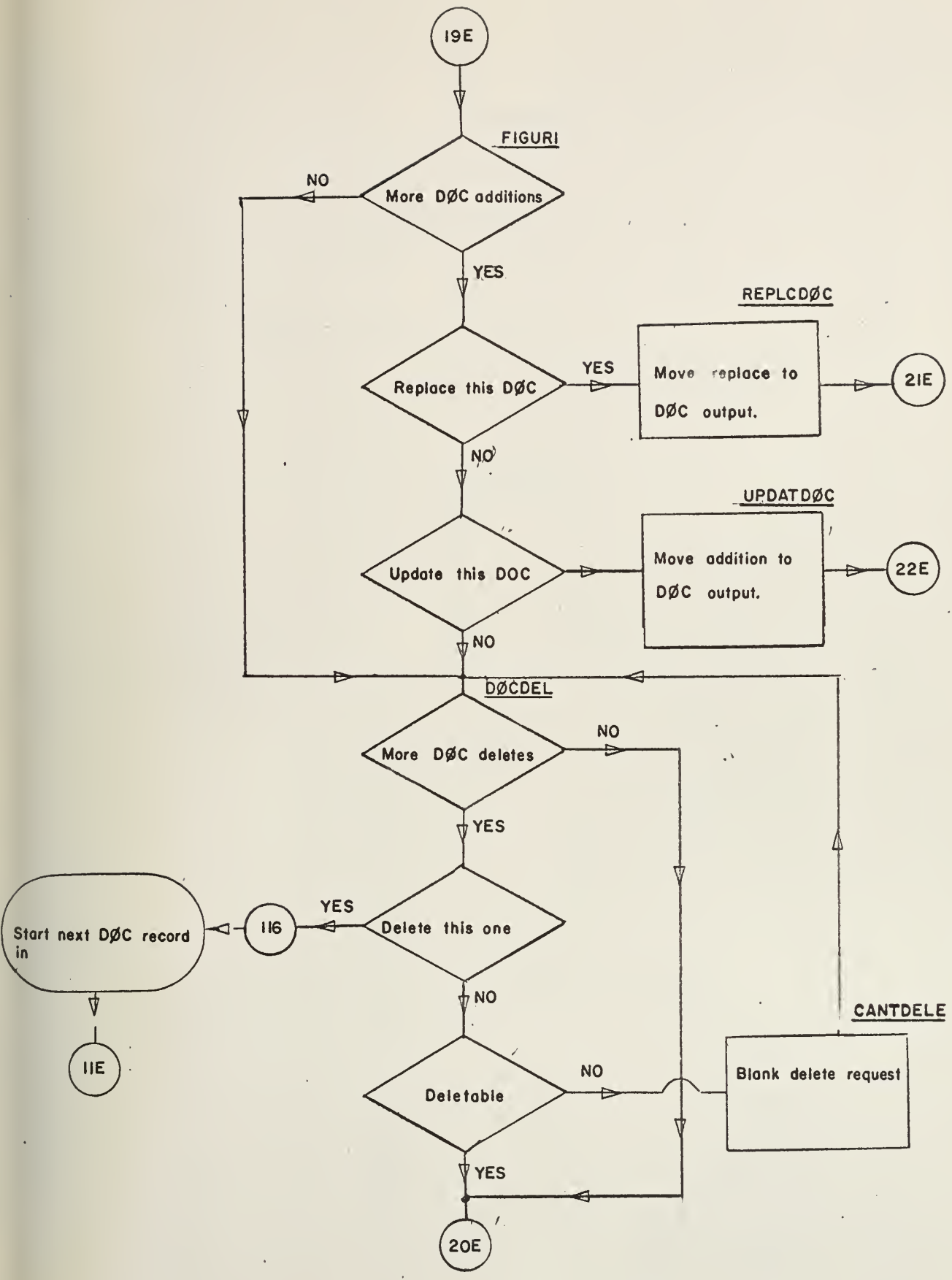

5E
WRITLAB
Write ENG label tp. 3, ch. 4
tp. err
YES
114
Fix tape error
NO
Log label on output tape
6E
TRYDØC
NO
DØCSWITC on
YES (time n, n≠1)
11E
18E
YES (Time 1)
DOCLAB
Set switch address of TRYDOC for time in.
Fix label error
115
YES
DØC label err.
NO
7E

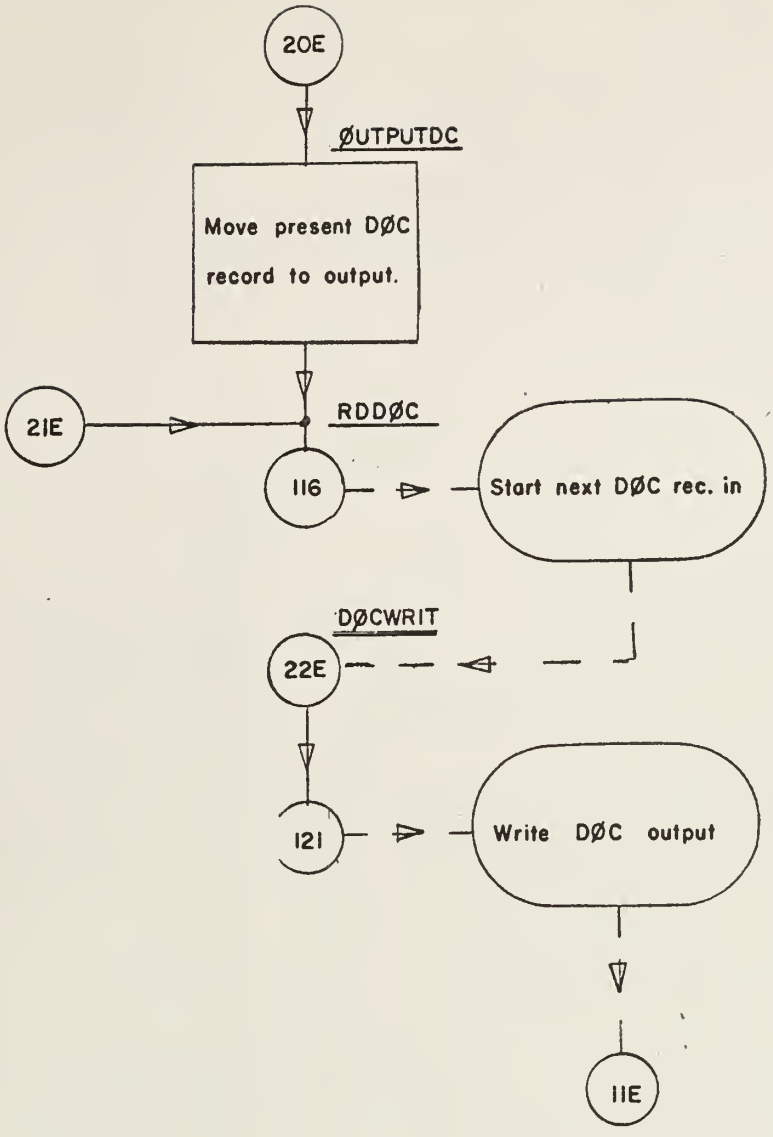

7E
Set up DØC output label
8E
PUTAWAY
116
Start DØC record in.
ADDLØW
NO
DOC updates to do
YES
Update lst. rec.
YES
Move new DØC no. to output label.
NO
Put its accession number in output label.
TRYDELE2
DOC deletes to do
NO
Read next DØC record
YES
116
YES
Delete lst rec.
NO
9E

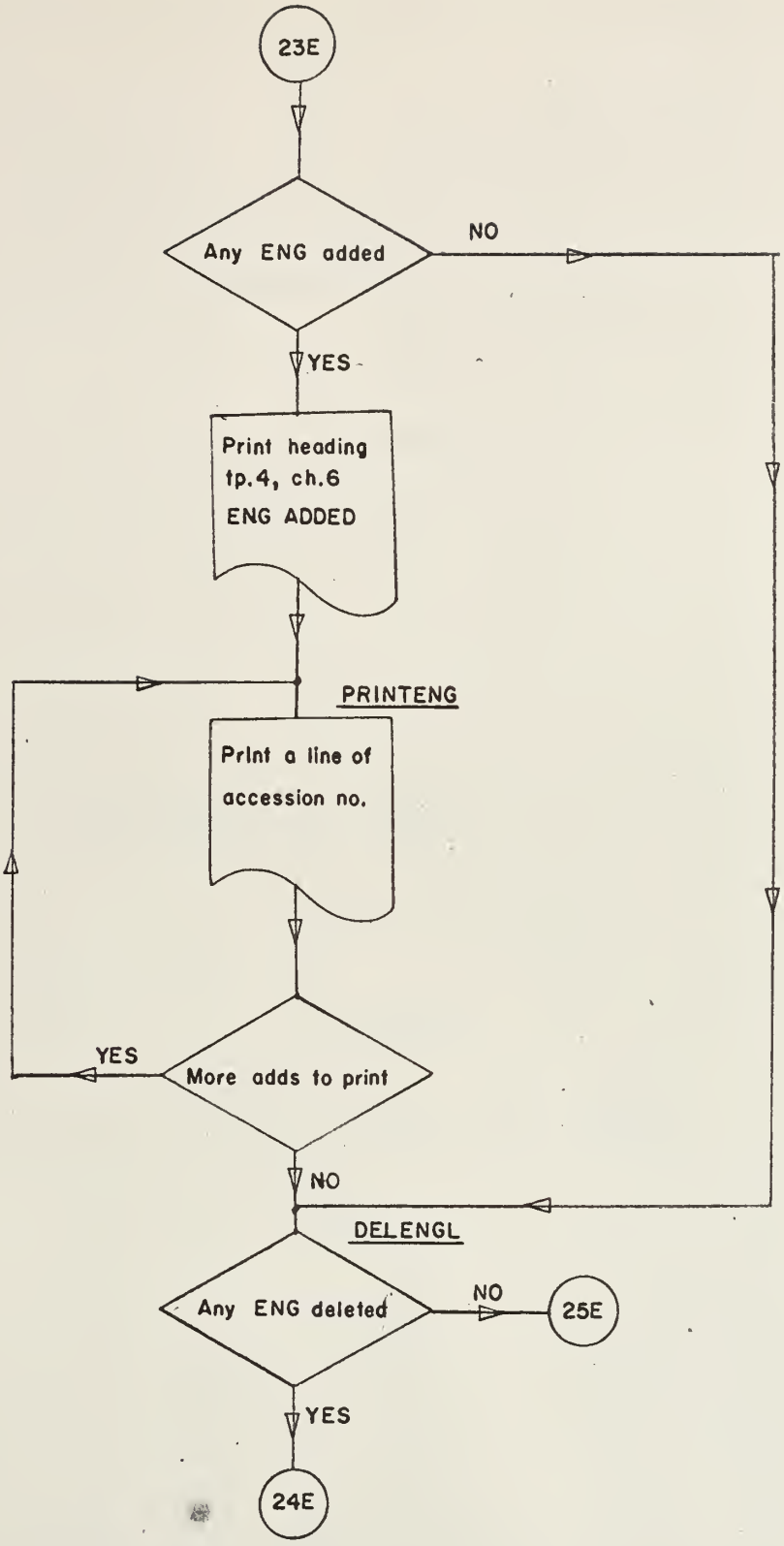

9E
WRITDLAB
Write label DØC tp.2, ch.6
tp. err.
YES
117
Fix tp. 2 error, ch.6
NO
Log DOC label on output tape
10E
11E
ØNENG
DØCAGAIN
NO
Update DØC
NO
Update ENG
YES
YES
12E
CHECKIN
18E
ENG tape err?
YES
EOF
NO
118
YES
NO
28E
Fix ENG tape 3, ch 5 error
13E

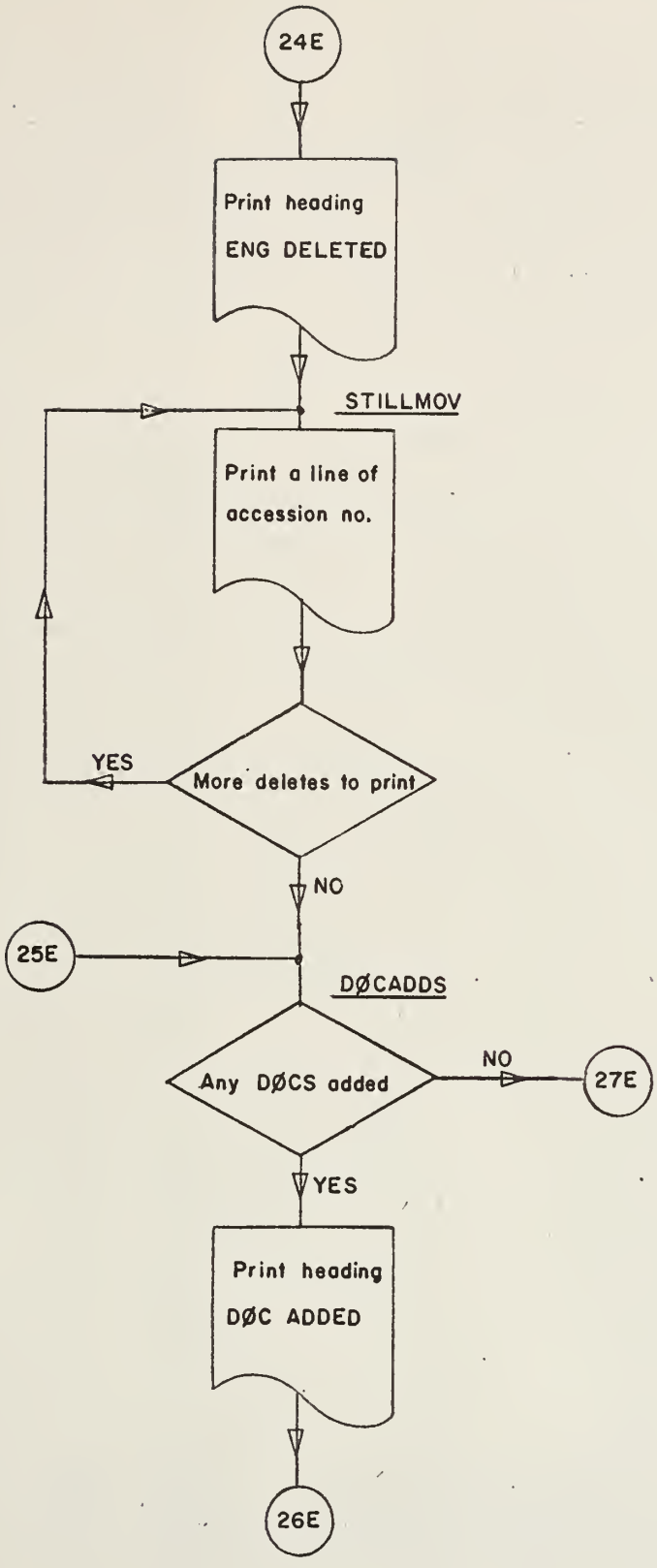

13E
More ENG additions
NO
YES
FIGURE
UPDATENG
Move ENG addition to output.
YES
Update this one
16E
NO
RPLCENG
Move ENG replace to output.
YES
Replace it
15E
NO
DØDELE
More deletes
NO
YES
DELENG
113
YES
Delete this rec.
Get next ENG inpuf
NO
Is it deletable
NO
Blank this delete. Get next one
YES
17E
14E

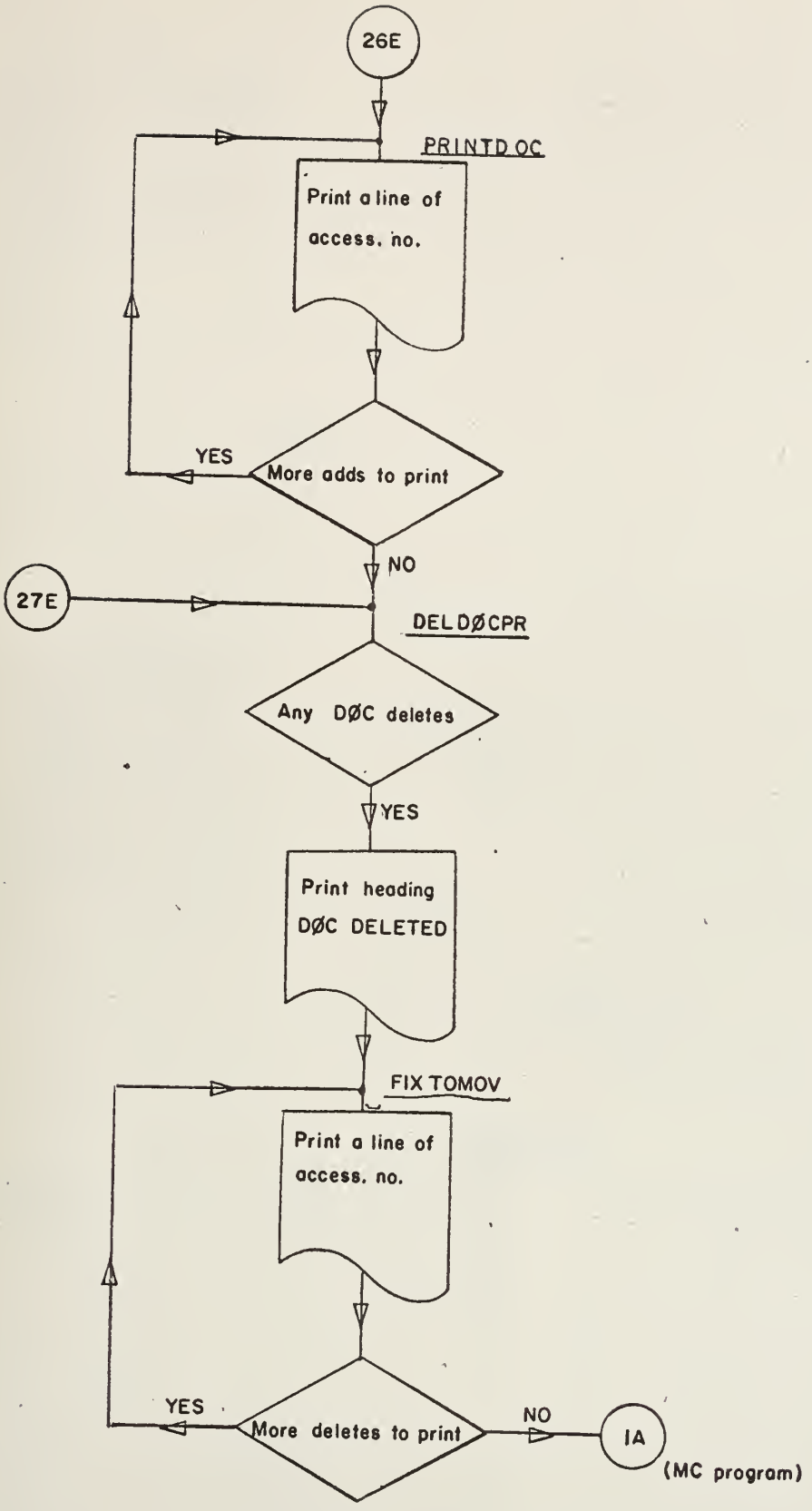

14E
MOVBUFF
Move ENG tp input to output.
15E
113
Get next ENG input
ENGWRITE
YES
122
EOT ENG output
16E
NO
Get new ENG output tape
119
Write ENG rec. tp3, ch4.
19E
DØCING
NO
12E
DØCSWITC on
17E
Fix tape error
YES
18E
DØDØC
120
NO
EOF?
YES
DØC tape error
YES
NO
30E
19E

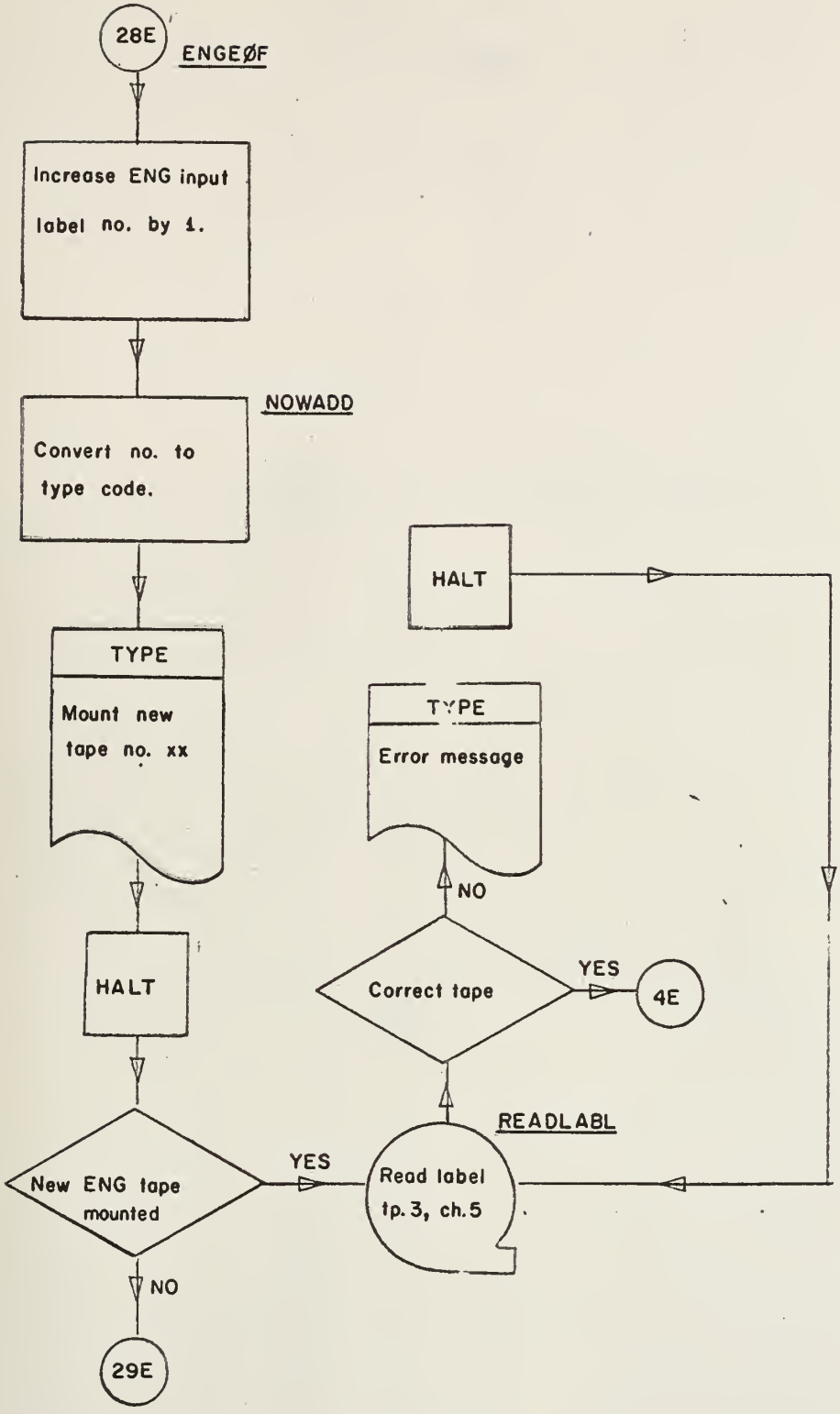

19E
FIGURI
More DØC additions
NO
YES
REPLCDØC
Replace this DØC
YES
Move replace to DØC output.
21E
NO
UPDATDØC
Update this DOC
Move addition to DØC output.
22E
NO
DØCDEL
More DØC deletes
NO
YES
Delete this one
YES
116
Start next DØC record in
11E
NO
CANTDELE
Deletable
NO
Blank delete request
YES
20E

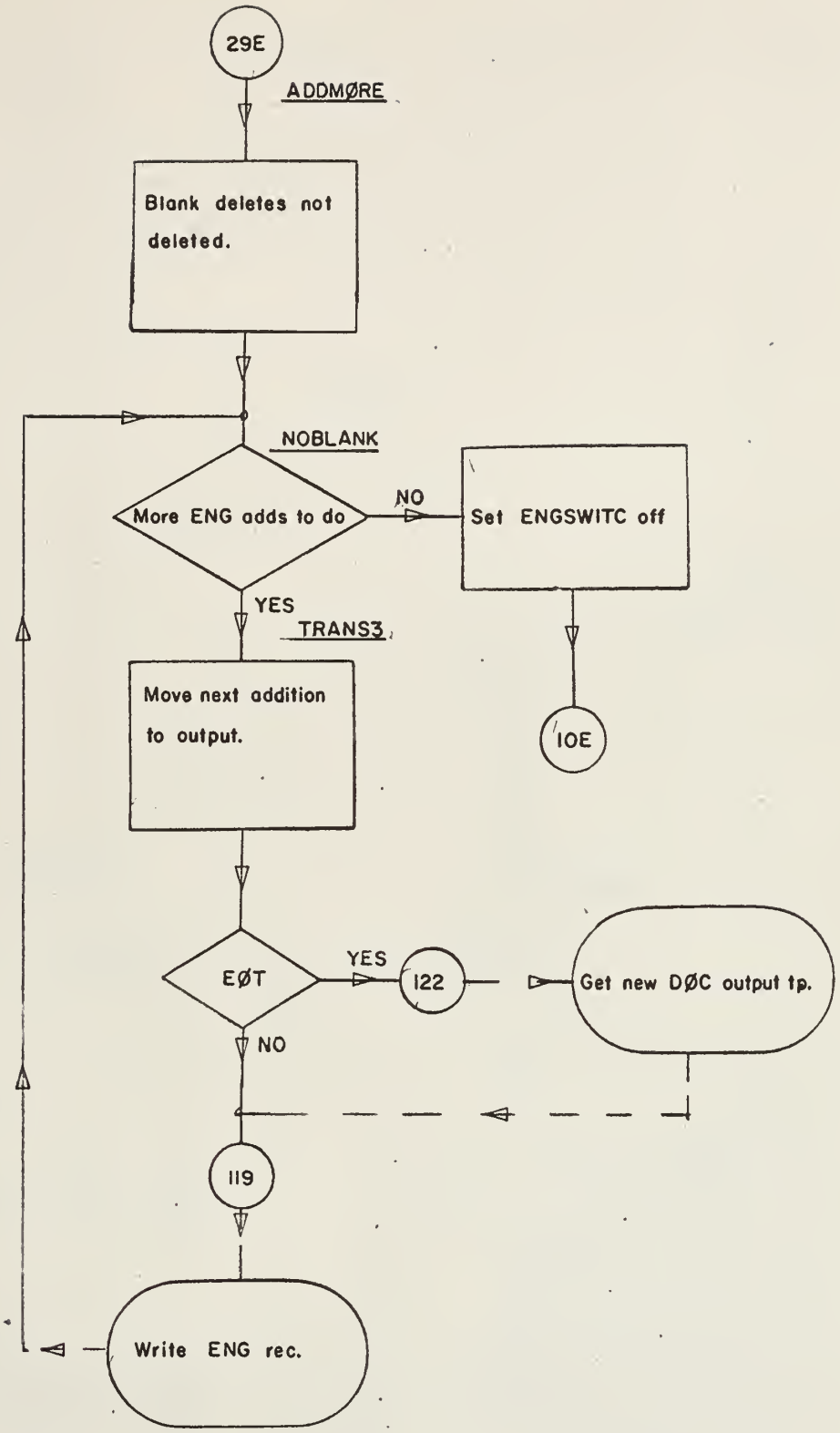

20E
ØUTPUTDC
Move present DØC record to output.
21E
RDDØC
116
Start next DØC rec. in
DØCWRIT
22E
121
Write DØC output
11E

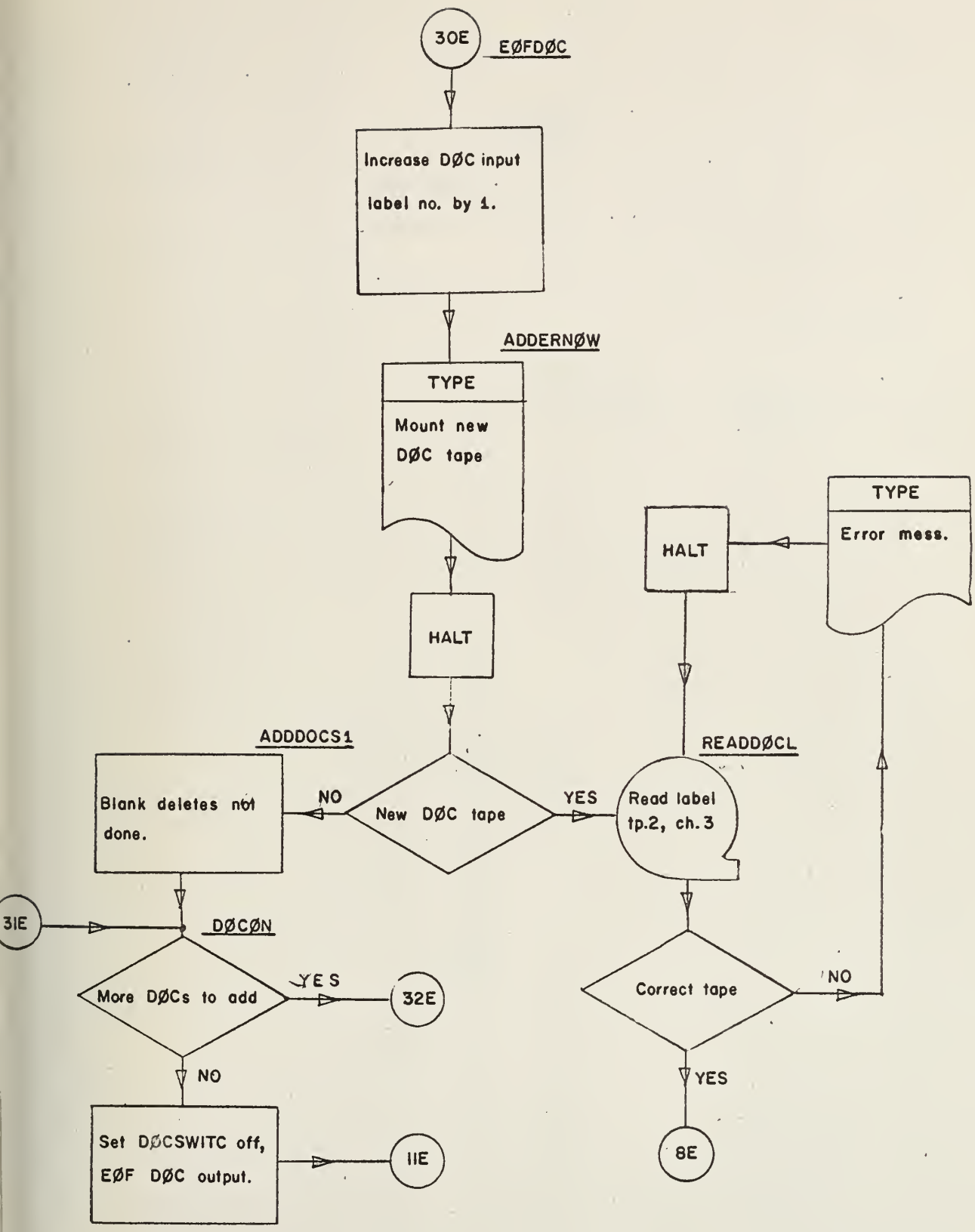

23E
Any ENG added
NO
YES
Print heading
tp.4, ch.6
ENG ADDED
PRINTENG
Print a line of
accession no.
YES
More adds to print
NO
DELENGL
Any ENG deleted
NO
25E
YES
24E

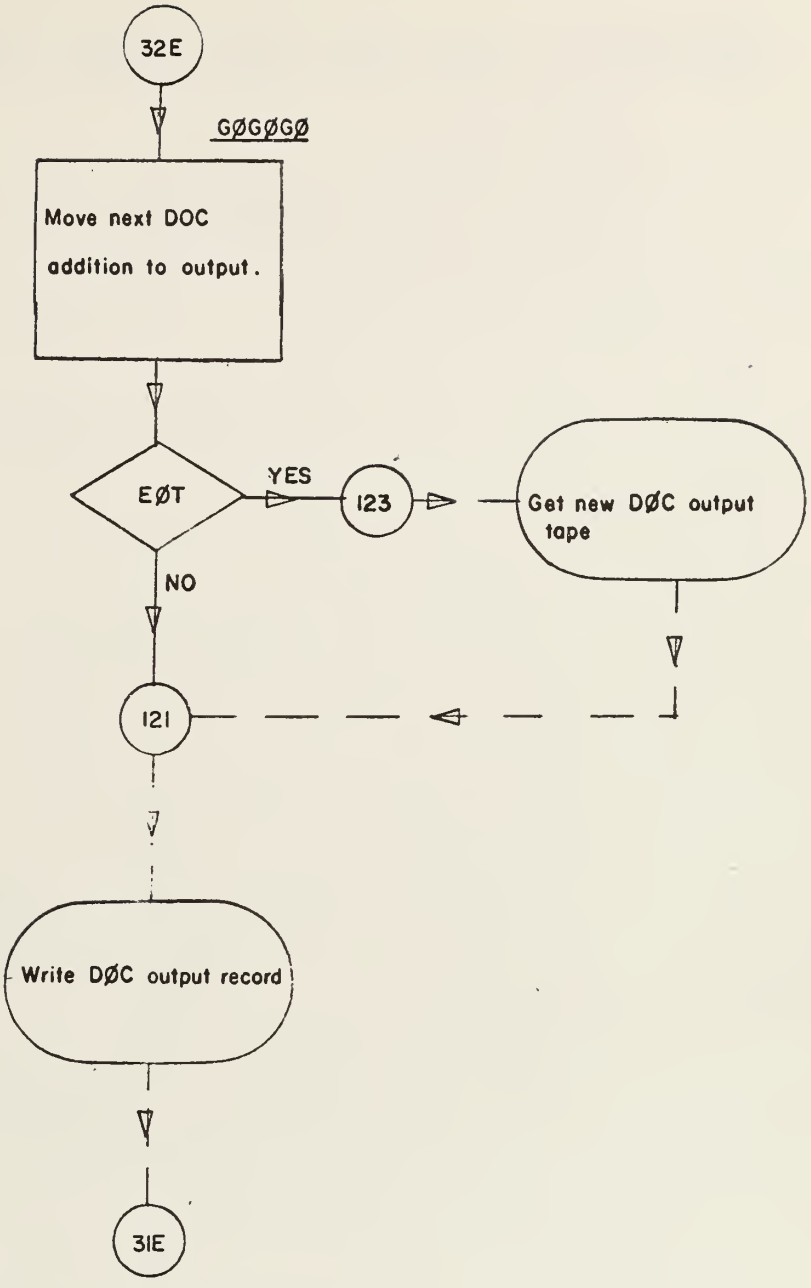

24E
Print heading
ENG DELETED
STILLMOV
Print a line of
accession no.
YES
More deletes to print
NO
25E
DØCADDS
Any DØCS added
NO
27E
YES
Print heading
DØC ADDED
26E


26E
PRINTDOC
Print a line of access. no.
YES
More adds to print
NO
27E
DELDØCPR
Any DØC deletes
YES
Print heading DØC DELETED
FIX TOMOV
Print a line of access. no.
YES
More deletes to print
NO
1A
(MC program)


28E
ENGEØF
Increase ENG input label no. by 1.
NOWADD
Convert no. to type code.
TYPE
Mount new tape no. xx
HALT
New ENG tape mounted
YES
NO
29E
READLABL
Read label tp. 3, ch. 5
Correct tape
YES
4E
NO
TYPE
Error message
HALT

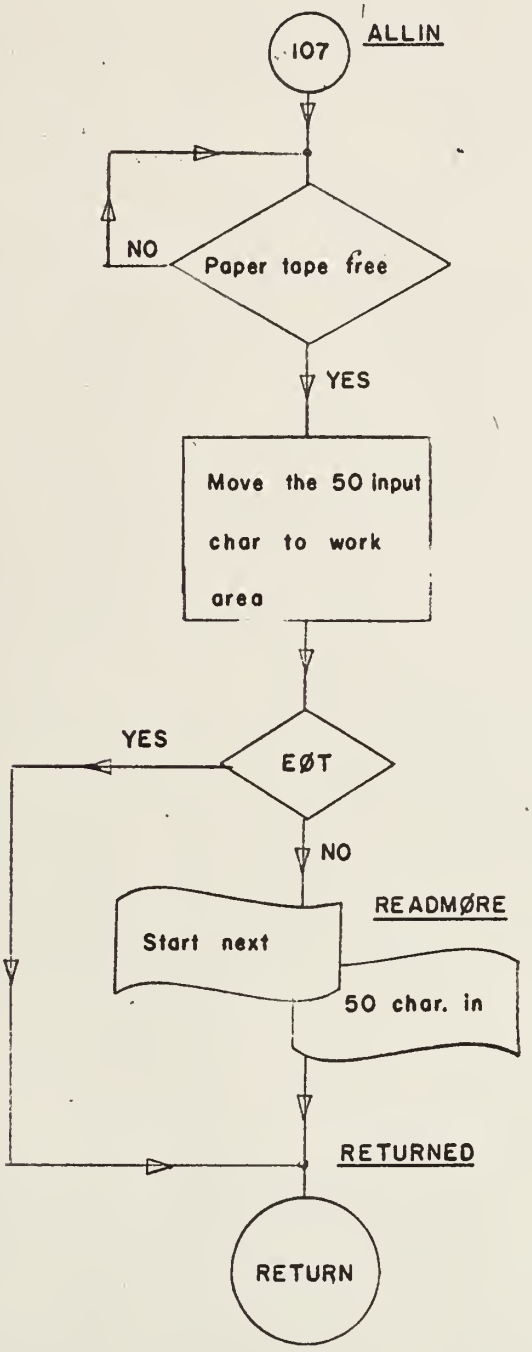

29E
ADDMØRE
Blank deletes not deleted.
NOBLANK
More ENG adds to do
NO
Set ENGSWITC off
YES
TRANS3
Move next addition to output.
10E
EØT
YES
122
Get new DØC output tp.
NO
119
Write ENG rec.

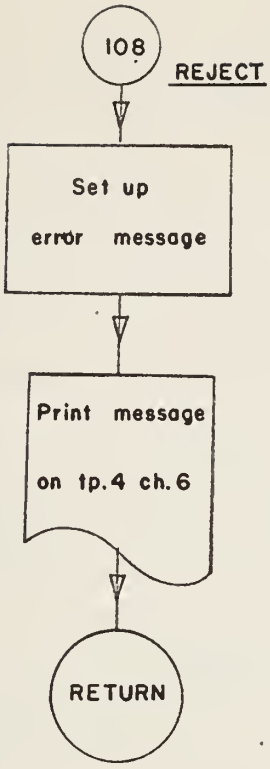

30E
EØFDØC
Increase DØC input label no. by 1.
ADDERNØW
TYPE
Mount new DØC tape
HALT
TYPE
Error mess.
HALT
ADDDOCS1
READDØCL
Blank deletes not done.
NO
New DØC tape
YES
Read label tp.2, ch. 3
31E
DØCØN
More DØCs to add
YES
32E
Correct tape
NO
NO
YES
Set DØCSWITC off, EØF DØC output.
11E
8E

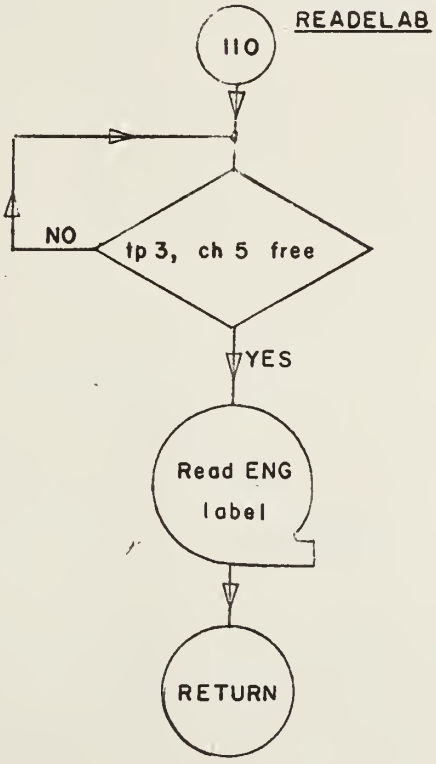

32E
GØGØGØ
Move next DOC addition to output.
EØT
YES
123
Get new DØC output tape
NO
121
Write DØC output record
31E

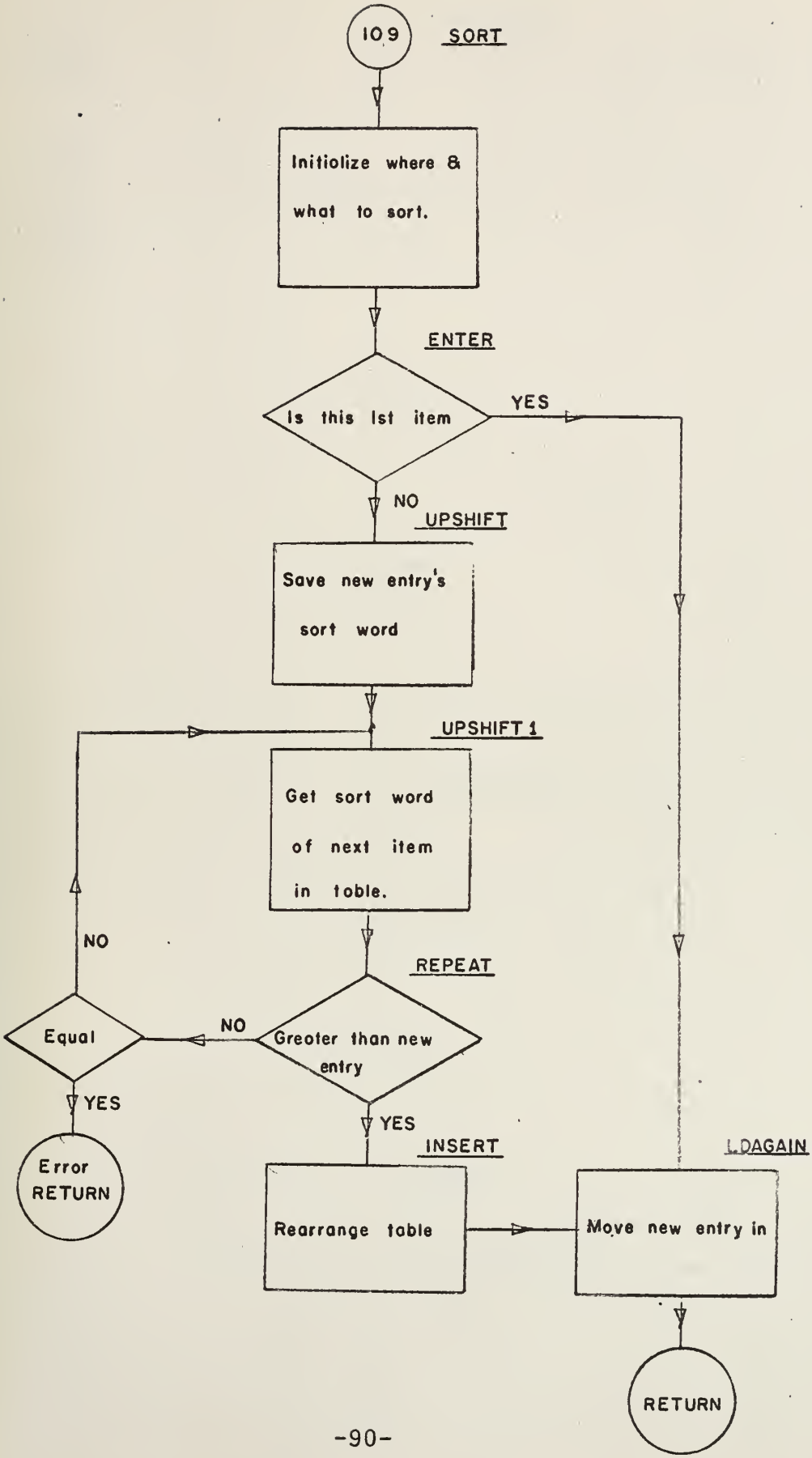
-SABIR2-UPDATE SUBROUTINES

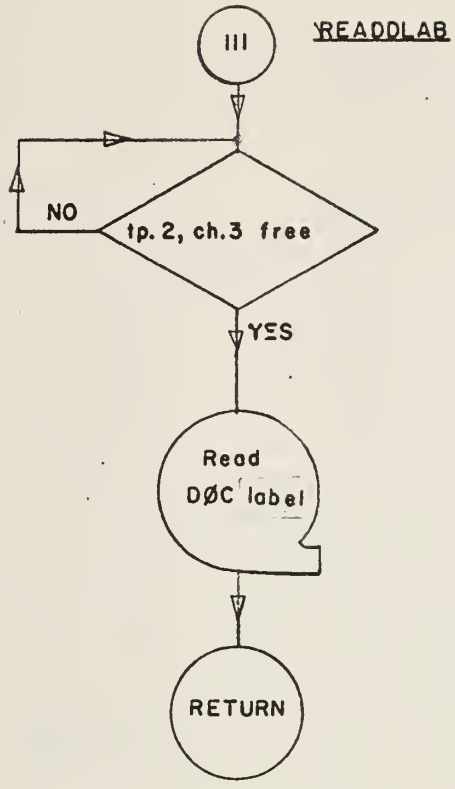
(those referred to but missing, are the same as SEARCH)

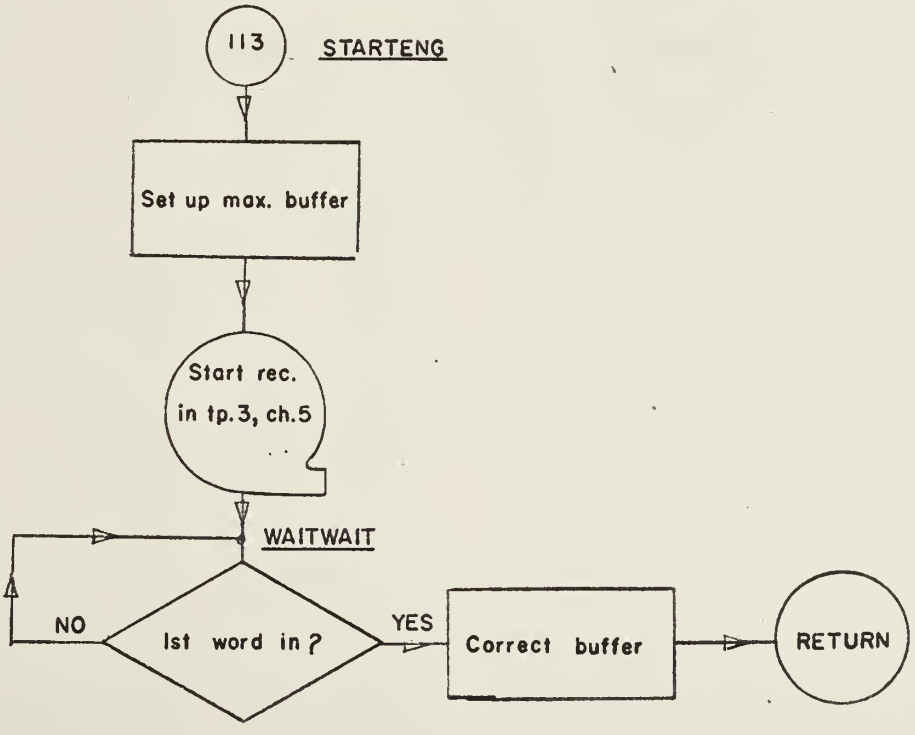


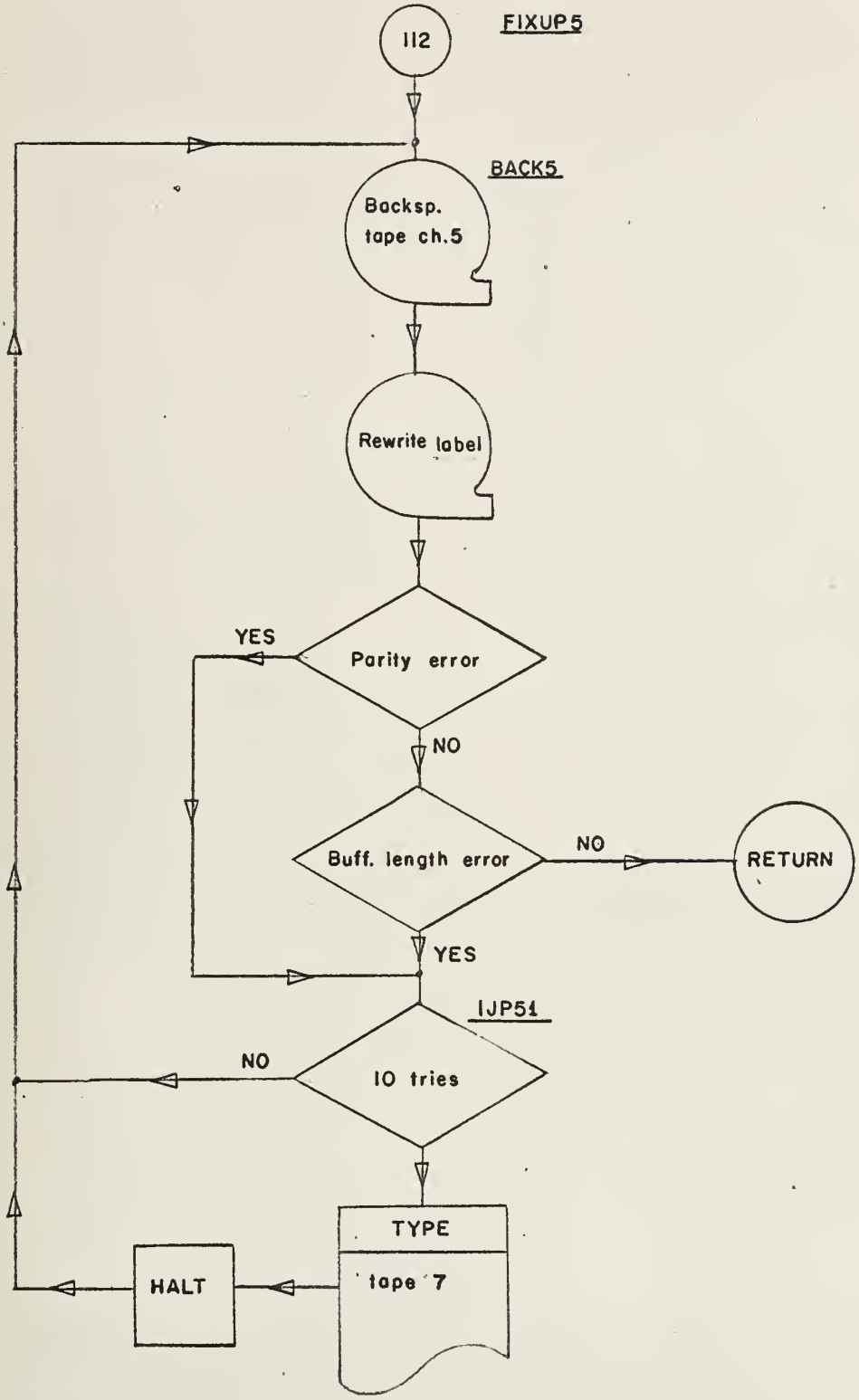

108
REJECT
Set up
error message
Print message
on tp.4 ch.6
RETURN

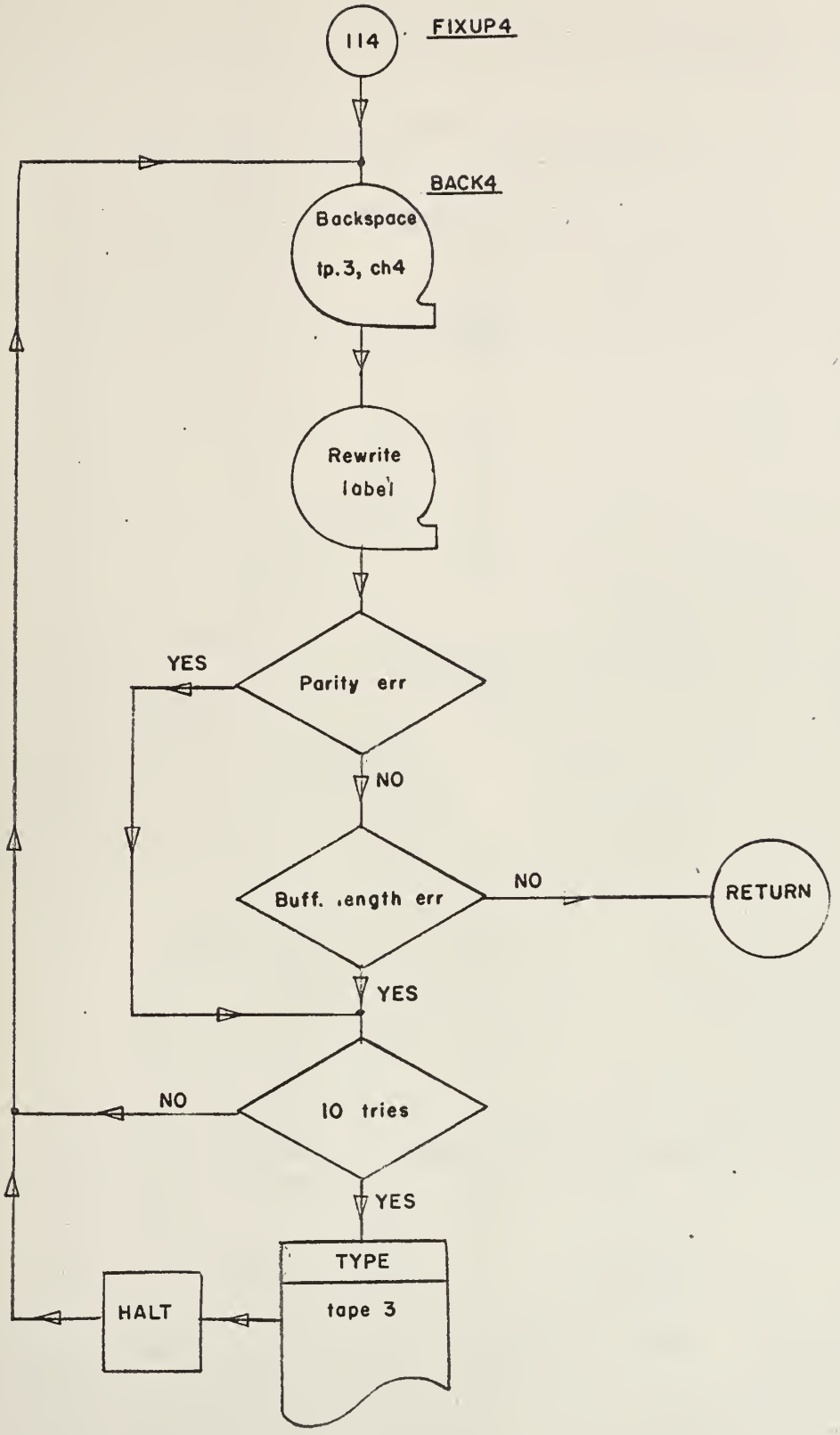

110
READELAB
NO
tp 3, ch 5 free
YES
Read ENG
label
RETURN

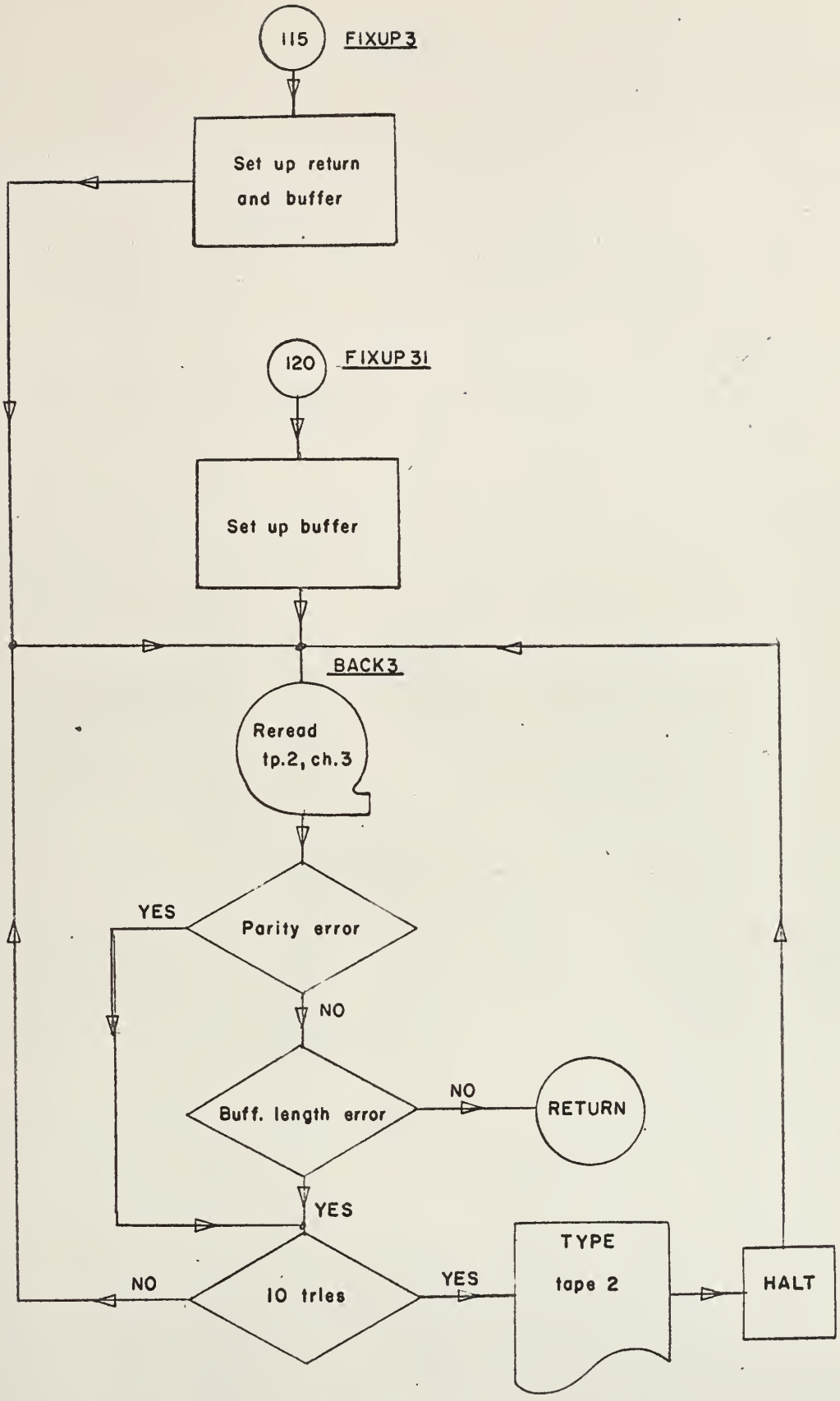

109
SORT
Initiolize where & what to sort.
ENTER
Is this Ist item
YES
NO
UPSHIFT
Save new entry's sort word
UPSHIFT 1
Get sort word of next item in toble.
REPEAT
Greoter than new entry
NO
Equal
NO
YES
YES
Error RETURN
INSERT
Rearrange table
L.DAGAIN
Move new entry in
RETURN

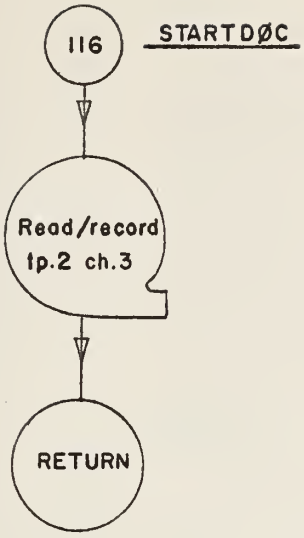

111
READDLAB
NO
tp. 2, ch.3 free
YES
Read
DØC label
RETURN

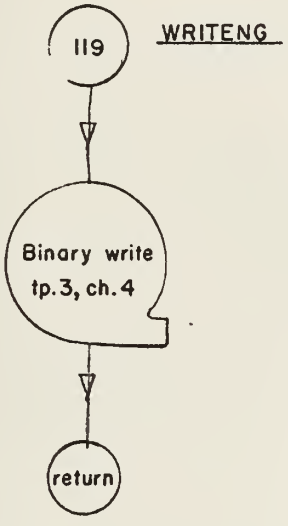

113
STARTENG
Set up max. buffer
Start rec.
in tp.3, ch.5
WAITWAIT
NO
Ist word in ?
YES
Correct buffer
RETURN

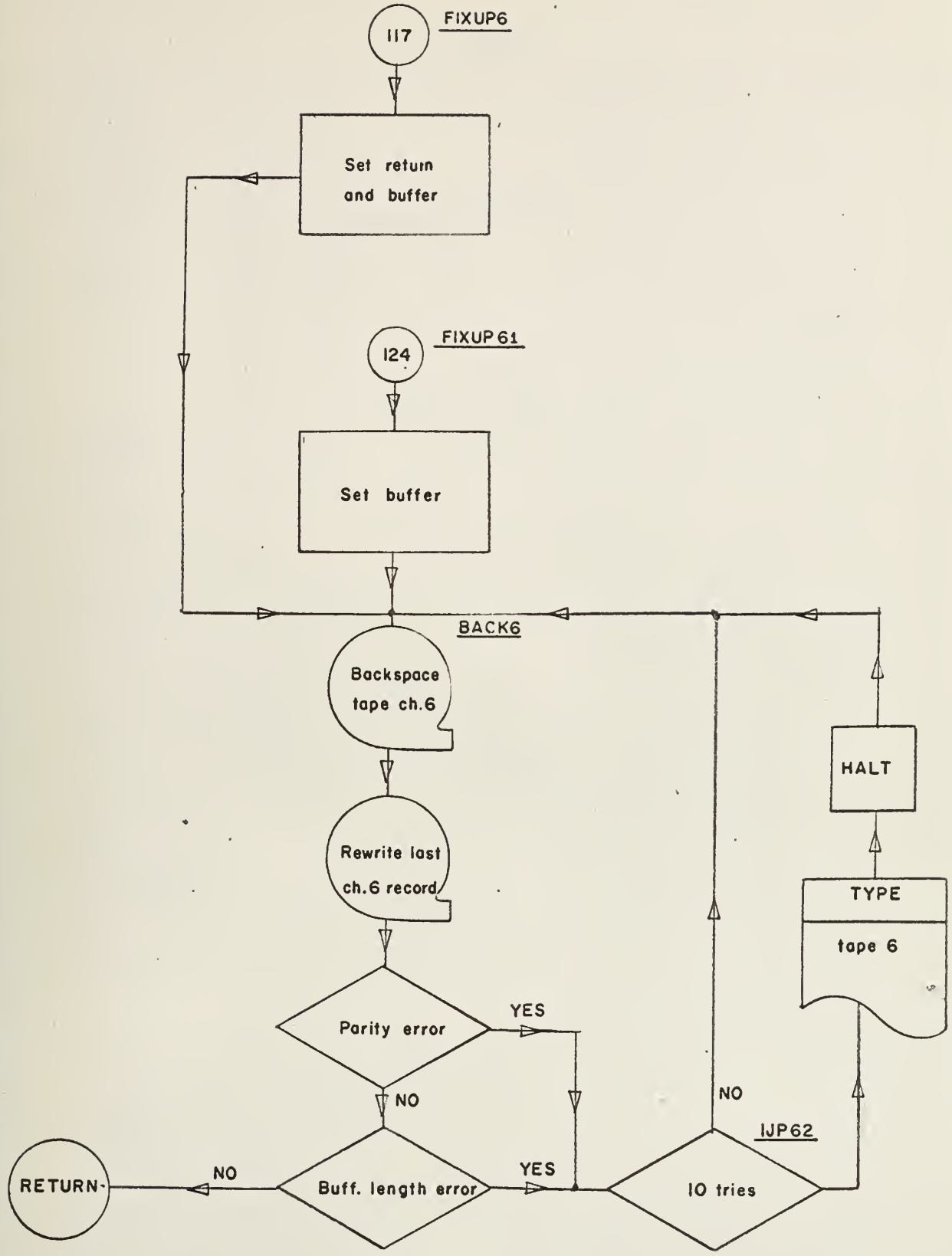

112
FIXUP5
BACK5
Backsp.
tape ch.5
Rewrite label
YES
Parity error
NO
Buff. length error
NO
RETURN
YES
IJP51
NO
10 tries
TYPE
tape 7
HALT

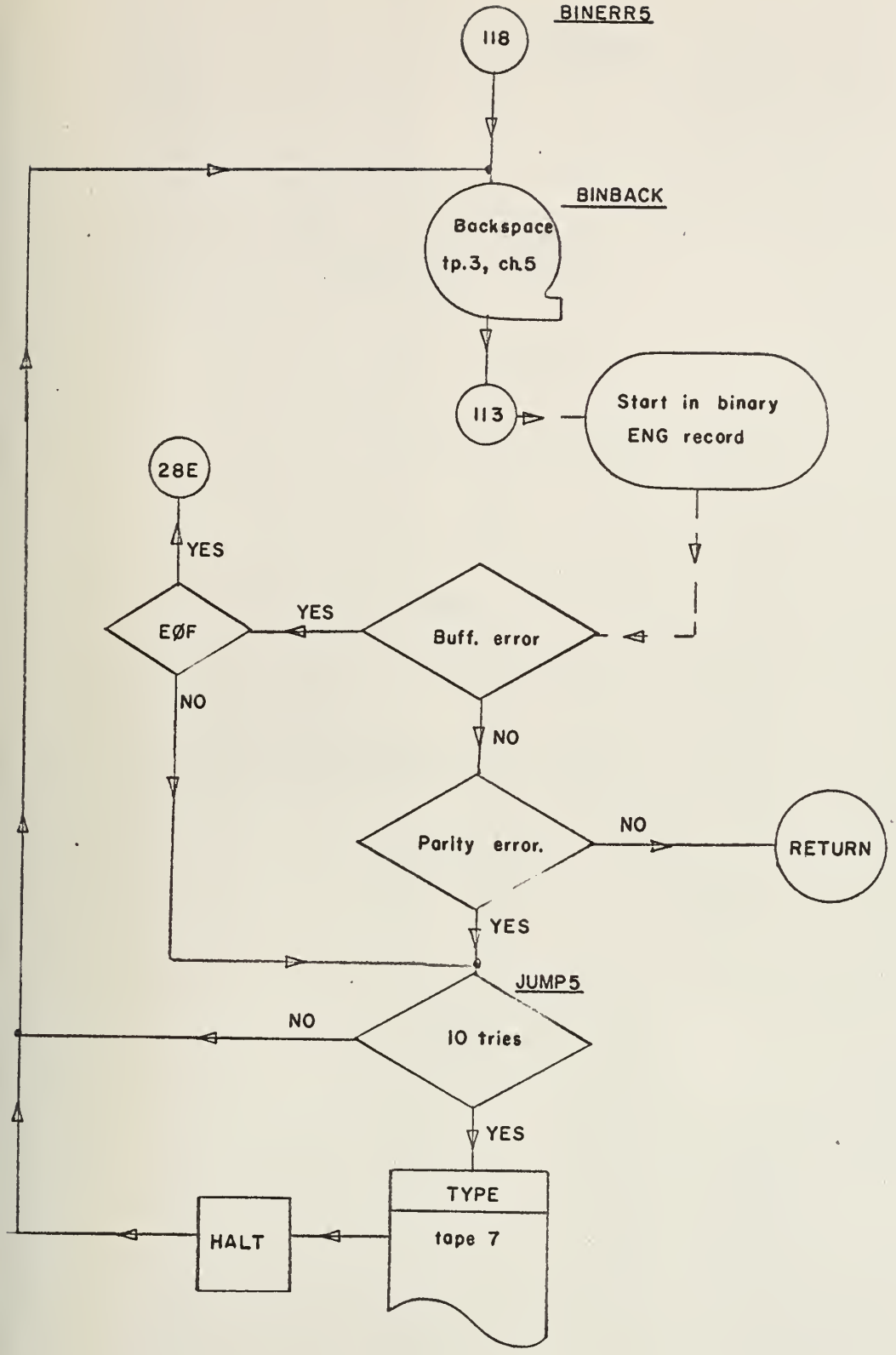

114
FIXUP4
BACK4
Backspace
tp.3, ch4
Rewrite
label
YES
Parity err
NO
Buff. length err
NO
RETURN
YES
NO
10 tries
YES
TYPE
tape 3
HALT

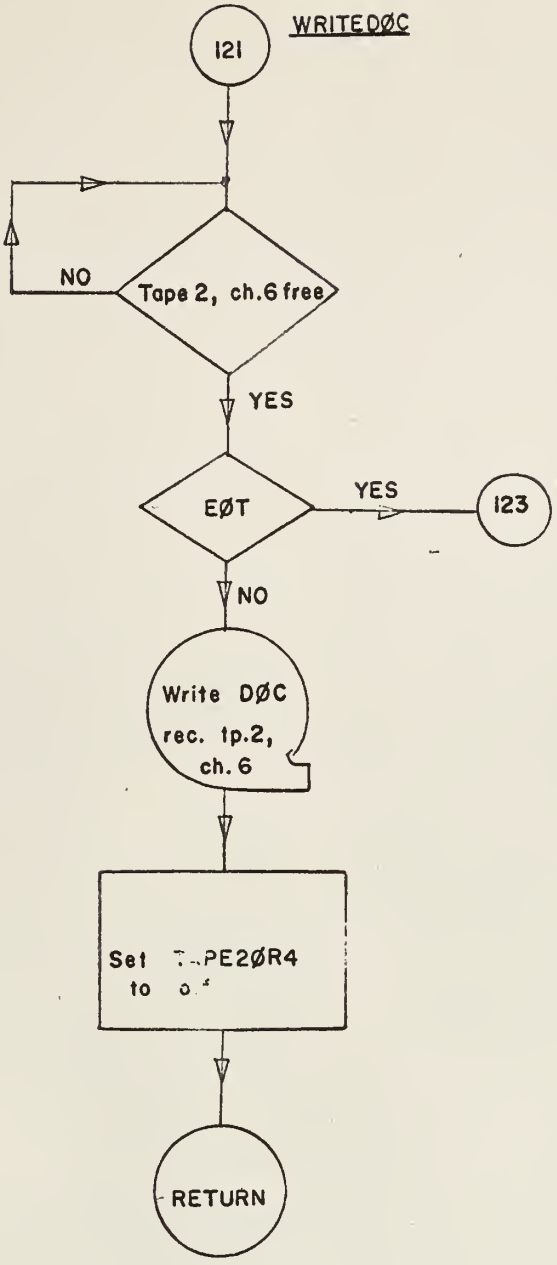

115
FIXUP3
Set up return and buffer
120
FIXUP31
Set up buffer
BACK3
Reread tp.2, ch.3
YES
Parity error
NO
Buff. length error
NO
RETURN
YES
NO
10 tries
YES
TYPE tape 2
HALT

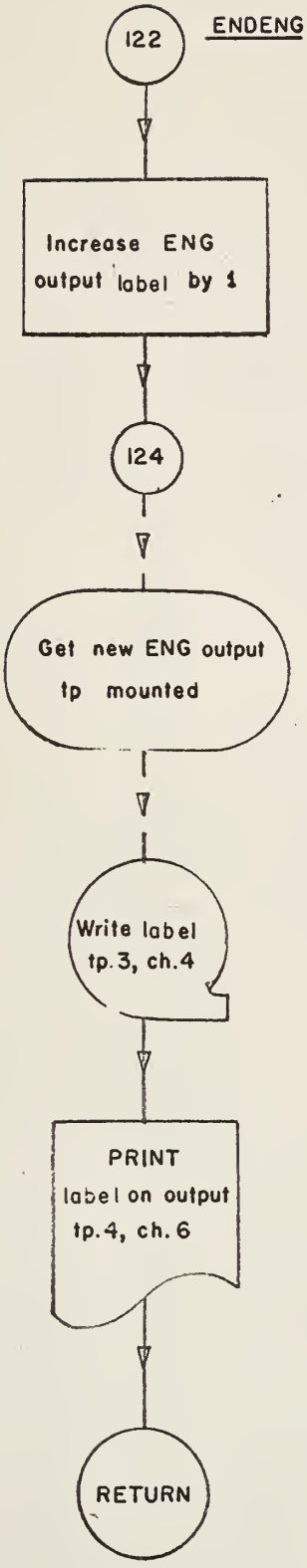

116
STARTDØC
Read/record
tp.2 ch.3
RETURN


119
WRITENG
Binary write
tp.3, ch.4
return

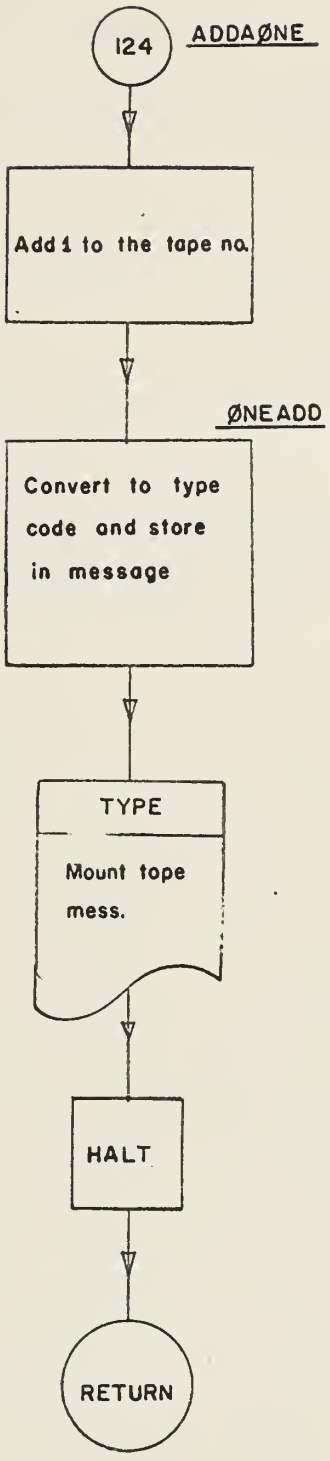

117
FIXUP6
Set return and buffer
124
FIXUP61
Set buffer
BACK6
Backspace tape ch.6
Rewrite last ch.6 record
Parity error
YES
NO
Buff. length error
NO
YES
RETURN
IJP62
10 tries
NO
HALT
TYPE
tape 6


BINERR5
118
BINBACK
Backspace
tp.3, ch.5
113
Start in binary
ENG record
28E
YES
EØF
YES
Buff. error
NO
NO
Parity error.
NO
RETURN
YES
JUMP5
NO
10 tries
YES
TYPE
tape 7
HALT


121
WRITEDØC
NO
Tape 2, ch.6 free
YES
EØT
YES
123
NO
Write DØC
rec. tp.2,
ch. 6
Set TAPE2ØR4
to
RETURN


122
ENDENG
Increase ENG output label by 1
124
Get new ENG output tp mounted
Write label tp.3, ch.4
PRINT label on output tp.4, ch. 6
RETURN

123
DØCEØT
Write EØF
tp.2, ch.6
Increase DØC output
label by 1
124
Get new DØC
tape mounted
Write DØC
label tp.2,
ch.6
PRINT
label on output
tp. 4, ch.6
RETURN


124
ADDAØNE
Add 1 to the tape no.
ØNEADD
Convert to type code and store in message
TYPE
Mount tope mess.
HALT
RETURN

REFERENCES

1. Wildberger, A. Martin, Information Retrieval, Thesis for M. S. in Mathematics, U. S. Naval Postgraduate School, Monterey, California, 1961.

2. Control Data Corporation, Control Data 1604 Computer Programming Manual, Publication 167, Minneapolis, Minnesota, (no date).

3. U. S. Naval Postgraduate School, Monterey, California, Memoranda dated 20 March 1963; from Associate Librarian to Chief, Technical Reports Section: Subject: "Modifications in the current processing of technical reports catalog tapes" and "Modifications in the current description cataloging procedures related to the readable output."

4. U. S. Naval Postgraduate School, Computer Center, "Symbolic Coded Relocatable Assembly Program (SCRAP) Manual, by Edward N. Ward, Monterey, California, 1 Sept. 1961.

APPENDIX 1

SABIR2 - SEARCH INPUT

paper tape input codes - lower case and upper case are treated alike

OCTAL EQUIV.	UC or LC CHAR	SIGNIFICANCE TO PROGRAM
00	-	ignored
01	t	T
02	ribbon shift	ignored
03	o (oh)	O (oh)
04	space	ignored
05	h	H
06	n	N
07	m	M
10	P.I.3	ignored
11	l (ell)	L (ell)
12	r	R
13	g	G
14	i	I
15	p	P
16	c	C
17	v	V
20	e	E
21	z	Z
22	d	D
23	b	B

OCTAL EQUIV.	UC or LC CHAR	SIGNIFICANCE TO PROGRAM
24	s	S
25	y	Y
26	f	F
27	x	X
30	a	A
31	w	W
32	j	J
33	9	9
34	u	U
35	q	Q
36	k	K
37	o	o (zero)
40	P.I.1	ignored
41	P.I.2	ignored
42	.	. (period)
43	"STOP"	end-of-input tape
44	;	;
45	CR	ignored
46	,	,
47	UC	ignored
50	/	/
51	"TAB"	ignored
52	]	ignored

OCTAL EQUIV.	UC or LC CHAR	SIGNIFICANCE TO PROGRAM
53		not listed (illegal)
54	..	end-of-record
55		not listed (illegal)
56	-	-
57	LC	ignored
60	8	8
61	"BACKSPACE"	ignored
62	5	5
63		unlisted (illegal)
64	4	4
65	1	1 (one)
66	6	6
67	P. rest	ignored
70	3	3
71	'ship end'	ignored
72	7	7
73	'P. Disc'	ignored
74	2	2
75	'Punch Off'	ignored
76	'Punch On'	ignored
77	"delete"	ignored
→	greater than 77	END OF TAPE

APPENDIX 2

SABIR2 UPDATE BIBLIOGRAPHY INPUT

(Document tape & deletion input is interpreted the same as search input)

Paper Tape

Octal equiv.	UC Char.	Sign. to progr.	Lc. Char.	Signific. to progr.
00	--	ignored	--	ignored
01	T	T	t	T
02	rib shift	ignored	rib shift	ignored
03	O	O	O	O
04	space	space	space	space
05	H	H	h	H
06	N	N	n	N
07	M	M	m	M
10	P.I.3	ignored	P.I.3	ignored
11	L	L	l	L (ell)
12	R	R	r	R
13	G	G	g	G
14	I	I	i	I
15	P	P	p	P
16	C	C	c	C
17	V	V	v	V
20	E	E	e	E
21	Z	Z	z	Z
22	D	D	d	D

Octal equiv.	UC Char.	Sign. to progr.	Lc. Char.	Signific. to progr.
23	B	B	b	B
24	S	S	s	S
25	Y	Y	y	Y
26	F	F	f	F
27	X	X	x	X
30	A	A	a	A
31	W	W	w	W
32	J	J	j	J
33	(	(	9	9
34	U	U	u	U
35	Q	Q	q	Q
36	K	K	k	K
37	)	)	o (zero)	o (zero)
40	P.I.1	ignored	P.I.1	ignored
41	P.I.2	ignored	P.I.2	ignored
42	.	.	.	. (period)
43	"STOP"	EOT	"STOP"	EOT (end of tape)
44	:	blank	;	blank
45	CR	blank	CR	blank
46	,	,	,	,
47	UC	Read UC MODE	UC	Read UC MODE
50	?	/ blank	/	/ (slash)
51	"TAB"	ignored	"TAB"	ignored

Octal equiv.	UC Char.	Sign. to progr.	Lc. Char.	Signific. to progr.
52	[	(	]	)
53	¬	illegal	¬	illegal
54	.	blank	..	EOR
55	¬	illegal	¬	illegal
56	-	-	-	- (Minus or dash)
57	lc	Read lc-mode	lc	Read lc-mode
60		blank	8	8
61	backsp.	ignored	backsp.	ignored
62	%	blank	5	5
63	¬	illegal	¬	illegal
64	$	$	4	4
65	+	+	1	1 (one)
66	*	*	6	6
67	P. rest	ignored	P. rest	ignored
70	#	blank	3	3
71	skip end	ignored	skip end	ignored
72		+	7	7
73	P. disc	ignored	P. disc	ignored
74	"	blank	2	2
75	Punch Off	ignored	punch off	ignored
76	Punch On	ignored	punch on	ignored
77	Delete	ignored	delete	ignored

APPENDIX 3

Magnetic Tape* Formats

1. System tape (unit 1 Ch. 3-4)

   a. Generating the system tape

      1. Arrange binary program decks as follows

         a) Bootstrap card (obtained from SCRAP assembled SABIR2BT binary deck with the 1st 2 binary ID cards removed and the binary TRA card removed; (see Reference 4).

         b) SABIR2LD (obtained from SCRAP assembled SABIR2LD binary deck by removing 1st 2 binary ID cards.)

         c) SABIR2WR (SCRAP absolute binary deck with octal correctors as necessary.)

         d) SABIR2MC (SCRAP absolute binary deck with octal correctors as necessary.)

         e) SABIR2S1 (SCRAP absolute binary deck with octal correctors.)

         f) SABIR2S2 (SCRAP absolute binary deck with octal correctors)

         g) SABIR2UP (SCRAP absolute binary deck with octal correctors)

      2. Put these cards on magnetic tape using 1401 program A1:CT01 or 168 ch/bin. rec. and 88 ch/BCD rec.

*CAUTION: All tapes must have EOT reflective marks.

3. Place this magnetic tape on unit 1, Ch. 5-6 of the 1604.

4. Place a system tape on unit 1, Ch. 3-4 of 1604.

5. BOOTSTRAP using the following:

00010 in A reg. right

200 00005 in FC & EA -- STEP

740 52011 in FC & EA -- STEP

745 00000 in FC & EA -- STEP

-- CLEAR

put 00006 in PAR -- START

6. A SABIR2 system tape will be generated on unit 1, Ch. 3-4 and should be file protected.

b. Error stops in generating the System tape

PAR	REASON
77563	Checksum error - press start to retry
77602	Tape read error unit 1, Ch. 5. Press start to retry.
77747	Tape write error unit 1, Ch. 4. Press start to retry.

c. Composition of the System tape

1. Rec. 1 - binary record of the Master control system i. e. SABIR2MC

2. Rec. 2 - binary record of Search program - part 1 i. e. SABIR2S1

3. Rec. 3 - binary record of Search program - part 2 i. e. SABIR2S2

4. Rec. 4 - binary record of Update program i. e. SABIR2UP

d. Using the System tape - see operating instructions.

2. DOC tapes

a. The first record consists of 32 BCD characters comprising the tape label.

1. The first 8 characters are the tape name and number

DOCbbb$\overset{*}{x}$x

where xx is a 2 digit tape number which is the sequence no. of the tape in the multi-reel file.

2. The next 8 characters (9-16) are of the form

byyyyyyy

where yyyyyyy is the accession no. of the first bulletin on the tape.

3. Characters 17-24 comprise the date in the following form

mm/dd/yy

where mm = 01, 02, ..., 12 the month,

dd = 01, 02, ..., 31 the day,

and yy = 01, 02, ..., 99 the year.

4. Characters 25-32 may be any BCD characters and at present are blank.

b. All following records consist of 120 characters having the following format.

1. Char. 1-8, the accession no. of the technical bulletin.

2. Char. 9-16, source no. of the bulletin which is of the form ooxnnnnn where x is an odd integer $1 \leq x \leq 9$ and n is any integer $o \leq n \leq 9$.

* small b means blank.

3. Characters 17-24 are the date of publication of the documents and is in the form ooooyymm where yy is the year and mm is the month.

4. Characters 24-120 are the uniterm numbers for the document, each consecutive 8 char. group comprising a uniterm and being of the form ooYnnnnn where Y is an even integer $o \leq Y \leq 8$ and n is any integer $o \leq n \leq 9$.

a) If there are not 12 uniterms for a document the end of the record will be filled with BCD blanks.

c. The tape is terminated with an End-of-file mark.

3. ENG tapes (bibliographies)

a. The first record consists of a 32 character BCD label record of the same format as the DOC tapes first record with the exception that the first 3 characters of the record are ENG.

b. All following records are variable length (a max. of 83, 1604 words) and in the binary mode.

1. The first word of the record contains the word count for the record.

2. All following words were BCD internally to the 1604 but were written on tape in the binary mode.

a) The second word of the record contains

obbbbbbb

b) The third word contains the accession no. of the document.

c) The fourth word contains blanks.

d) Thereafter there are 15 words of bibliography information followed by a blank word, 15 words and a blank up to the last group which may have 0-15 words and is followed by EOR gap.

c. The tape is terminated by an END-OF-FILE mark.

d. This tape may be printed on the IBM 1401 using program A8: PRNTENG01 (see Appendix 8).

4. The output tape (unit 4, Ch. 6)

Format varies depending upon the nature of the run. The tape is written in BCD and terminates with three lines of "END-OF-TAPE, END-OF-TAPE, END-OF-TAPE." and an EOF which are put on the tape by the operator's selection of the END. option.

APPENDIX 4

1. Sample SEARCH paper tape input.

```
dower/1/ 00002076 /teletype/writer¨
dower/2/ 00002416 /facsimile//////¨
dower/3/ 00002413 /fsk////¨

hoste/1/ 00002072 /ramjet/¨
hoste/2/ 00002072 00001673 /ramjet/fuel////¨
hoste/3/ 00004645 00001630 /ram/rocket/////¨
hoste/4/ 00004645 00001630 00001673 /ram/rocket/fuel¨
hoste/5/ 00001630 00001673 /rocket/fuel////¨
hoste/6/ 00002072 00001674 /ramjet/propellant//////¨
hoste/7/ 00001630 00001674 /rocket/propellant//////¨
hoste/8/ 00004645 00001630 00001674 /ram/rocket/propellant//¨

jense/1/ 00003157 00001425 00001230 /infrared/detection/
         countermeasures/////¨
jense/2/ 00003157 00001425/infrared/detection/¨
jense/3/ 00003157 00001230 /infrared/countermeasures///////¨
```

APPENDIX . 4

2. Sample UPDATE paper tape input for DOC (coded) update and deletes.

Print out of each of three tapes.

to delete u0076104 s0070068 c0070062 c0072373 s0073937 c0074000
s0074062 s0075336
c0075085..

s0074861 00100264 00006307 00001753 00011066 00001755..
c0074865 00100012 00006310 00010754 00003362 00002207 00000565
00012367 00001173 00001706 00005354 00001656..
c0074866 00100012 00006310 00002206 00002207 00010017 00001173
00005432 00001706 00001154..
c0074867 00100012 00006310 00001776 00007445 00005432 00001706
00000565 00002035 00004032 00003362 00002207 00001154..
c0074868 00100012 00006310 00002206 00002202 00004624 00000343
00001763 00002207 00012300 00001126 00000536..
u0074871 00100047 00006307 00001152 00000340 00001674 00001630
00001743 00001623 00002045 00002021 00001615 00002000..
u0074873 00100120 00006308 00005624 00002011 00001062 00000442
00001676 00000207 00000360 00002306..
u0074874 00100401 00006305 00005331 00001654 00004761 00001670
00002016 00010743 00001615 00005237 00001717 00006031 00002020..
u0074875 00100401 00006306 00002202 00001646 00001615 00000603
00000552 00004032 00000077 00003351 00004515 00002016 00005417
00004427..
u0074876 00100401 00006306 00005763 00001615 00001715 00004515
00002016 00004175 00002020 00074877 00100055..
u0074877 00100055 00006307 00010464 00000055 00001623 00004275
00005517 00001371 00004260 00004711..
u0074878 00100012 00006309 00003734 00011052 00001105 00001377
00000561 00001745 00002136 00001767 00002016..
u0074879 00100012 00006309 00007352 00001173 00000325 00001667
00001664 00000723 00001154 00002362 00002024 00001630..
u0074880 00100012 00006309 00005265 00001716 00002004 00004115
00005354 00001773..

s0057005 00100123 00006009 00001643 00002206 00000077 00001054
00001137 00001645..

3. Sample UPDATE paper tape input for ENG update.

U-77,709
Aerospace Research Laboratories.
ARL-63-140.
Nature of the interaction between electrons and well-defined surfaces. II. Interaction between a small cross-section helical electron beam and uniform electrical fields perpendicular to the helical axis, by A. G. Jackson and E. L. Kern. August 1963. 49 p.

U-77,710
Army Missile Command.
Report RG-TR-63-25.
Design and development of flat cable electrical connectors, by Charles E. Riley and Kenneth W. Plunkett. 5 September 1963. 63 p.

U-77,711
Oak Ridge National Laboratory.
ORNL-[illegible].
Activity release from the N. S. Savannah in the maximum credible accident, by T. D. Anderson and others. 16 October 1963. 112 p.

U-77,712
Army Personnel Research Office.
TRN-132.
Successive AFQT forms - - comparisons and evaluations, by A. G. Bayroff. May 1963. 18 p.

U-77,713
Aerospace Research Laboratories.
ARL 63-174.
Simultaneous tests and the efficiency of generalized balanced incomplete block designs, by P. R. Krishnaiah. October 1963. 93 p.

U-77,714
Los Alamos Scientific Laboratory.
LAMS-2960.
Implicit radiation diffusion, by Robert N. Thorn and Burton Wendroff. 15 August 1963. 26 p.

U-77,715
Microwave Research Institute.
PIBMRI-1151-63.
Leaky wave radiation from a periodically slotted waveguide, by Jean-Paul Renault. 8 May 1963. 16 p.

```
REQUESTS FOR    03/17/64
HOSTE/1/00002072/RAMJET/
HOSTE/2/0000207200001673/RAMJET/FUEL////
HOSTE/3/0000464500001630/RAM/ROCKET/////
HOSTE/4/00004645000016300C001673/RAM/ROCKET/FUEL
HOSTE/5/0000163000001673/ROCKET/FUEL////
HOSTE/6/0000207200001674/RAMJET/PROPELLANT//////
HOSTE/7/0000163000001674/ROCKET/PROPELLANT//////
HOSTE/8/00004645000016300C001674/RAM/ROCKET/PROPELLANT//
JENSE/1/0000315700001425OC001230/INFRARED/DETECTION/COUNTERMEASURES/////
JENSE/2/
ERROR   NOT EVEN,REQUEST DELETED
JENSE/3/0000315700001230/INFRARED/COUNTERMEASURES///////
DOWER/1/000C2076/TELETYPE/WRITER
DOWER/2/00002416/FACSIMILE//////
DOWER/3/00002413/FSK////
```

APPENDIX 5

U0058366

U0058377

C0058691

C0058974

U0060957

S0061096

U0061426

C0061689

C0061690

U0063431
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION TN-D-991 PRELIMINARY INVESTIGATION OF AN UNDERWATER RAMJET POWERED BY COMPRESSED AIR, BY ELMO J. MOTTARD AND CHARLES J. SHOEMAKER. DECEMBER 1961. 36 P.

C0063536
TEXACO EXPERIMENT INCORPORATED LOW-VOLUME RAMJET SUMMARY REPORT FOR PERIOD FROM MAY 1960 THROUGH OCTOBER 1961. 1 NOVEMBER 1961.32 P. TP-185. TP-185

C0065053
TEXACO EXPERIMENT INCORPORATED LOW-VOLUME RAMJET QUARTERLY REPORT FOR PERIOD FROM NOVEMBER 1961 THROUGH JANUARY 1962. 1 FEBRUARY 1962. 8 P. TM-1321, EXP 334. FOR OTHER REPORTS IN THIS SERIES SEE TECHNICAL REPORTS KARDEX

U0065555
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ARMY CHEMICAL CENTER SSD-TDR-62-177 A TEST SERIES CONDUCTED TO DETERMINE THE FEASIBILITY OF USING WATER FOG OR A THERMAL UPDRAFT TO CONTROL OR DISPERSE THE FUMES RESULTING FROM SPILLS OF NITROGEN TETROXIDE. NOVEMBER 1962. V. P. AIR FORCE SYSTEMS COMMAND SSD-TDR-62-177

UCC69955
ARMY CHEMICAL CENTER SSD-TDR-62-176, VOL. I MODIFIED TYPE A-1B UDMH + HYDRAZINE SERVICING TRAILER VOLUME I OPERATION + SERVICE INSTRUCTIONS. NOVEMBER 1962. V. P. AIR FORCE SYSTEMS COMMAND SSD-TDR-62-176

UCC69956
ARMY CHEMICAL CENTER SSD-TDR-62-174 MODIFIED TYPE B-2 FUMING NITRIC ACID SERVICING SEMI-TRAILER. NOVEMBER 1962. V. P. AIR FORCE SYSTEMS COMMAND SSD-TDR-62-174

UCC69957
ARMY CHEMICAL CENTER SSD-TDR-62-176, VOL. II MODIFIED TYPE A-1B UDMH + HYDRAZINE SERVICING TRAILER VOLUME II PARTS BREAKDOWN. NOVEMBER 1962. 40 P. AIR FORCE SYSTEMS COMMAND SSD-TDR-62-176

UCC69958
ARMY CHEMICAL CENTER SSD-TDR-62-176, VOL. III MODIFIED TYPE A-1B UDMH + HYDRAZINE SERVICING TRAILER VOLUME III OVERHAUL INSTRUCTIONS. NOVEMBER 1962. V. P. AIR FORCE SYSTEMS COMMAND SSD-TDR-62-176

UCC70053
NAVAL RADIOLOGICAL DEFENSE LABORATORY USNRDL-TR-589 A SCINTILLATION DETECTION SYSTEM FOR THE INSPECTION OF LARGE SOLID PROPELLANT ROCKET MOTORS, BY K. F. SINCLAIR AND H. A. ZAGORITES. 31 MAY 1962. 20 P.

CCC70117

UCC70162
AIR FORCE SYSTEMS COMMAND TRANSACTIONS OF THE SEVENTH SYMPOSIUM ON BALLISTIC MISSILE AND SPACE TECHNOLOGY HELD AT THE U. S. AIR FORCE ACADEMY ON 13-16 AUGUST 1962. VOLUME I SPACE VEHICLES AND SYSTEM DESIGN HYPERSONICS AND RE-ENTRY TECHNIQUES PROPULSION STRUCTURES AND MATERIALS MATHEMATICAL RELIABILITY TECHNIQUES. N. C. 536 P. AEROSPACE CORPORATION.

CCC70196
LIQUID ROCKET PROPULSION LABORATORY, PICATINNY ARSENAL TR 3060 PREPACKAGED LIQUID ROCKET PROPULSION RESEARCH CONSTANT CHAMBER PRESSURE VARIABLE THRUST POWER PLANT (U), BY W. J. BUCKLEY, JR. AND S. R. MATOS. NOVEMBER 1962. 31 P.

UCC70245
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION TR R-140 PERIGEE PROPULSION FOR ORBITAL LAUNCH OF NUCLEAR ROCKETS, BY PAUL G. JOHNSON AND FRANK E. ROM. 1962. 24 P.

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TEXACO EXPERIMENT INCORPORATED DESIGN CRITERIA FOR ADVANCED PROPELLANT SYSTEMS QUARTERLY PROGRESS REPORT FOR SEPTEMBER - NOVEMBER 1962. 1 DECEMBER 1962. 22 P. TM-1390. FOR OTHER REPORTS IN THIS SERIES SEE TECHNICAL REPORT KARDEX

UCC70375
DEFENSE METALS INFORMATION CENTER DMIC REPORT 180 DESIGN CONSIDERATIONS IN SELECTING MATERIALS FOR LARGE SOLID-PROPELLANT ROCKET-MOTOR CASES. 10 DECEMBER 1962. V. P.

CCC70479
NAVAL ORDNANCE TEST STATION NAVORD REPORT 3477 NOTS 1089 SOME PROPERTIES OF SEVERAL DOUBLE-BASE SOLID PROPELLANTS FOR ROCKETS, BY FAY COUCH AND F. A. WARREN. 15 AUGUST 1955. 56 P.

CCC70555
CHEMICAL PROPULSION INFORMATION AGENCY ROCKET MOTOR MANUAL SPIA/M1, VOLUME II - MOTORS OF CURRENT INTEREST, REVISED TO DECEMBER 1962 AND VOLUME I - OBSOLETE AND SUPERSEDED MOTORS INDEX, REVISED TO DECEMBER 1962. N. C. V. P.

CCC70559
MED RESEARCH MED 354 SERIES A RESEARCH IN THE DEVELOPMENT OF SOLID PROPELLANTS (U), BY EMIL J. FELLUND. 19 FEBRUARY 1963. 27 P.

COC70625

CCC70634
NORTH AMERICAN AVIATION. ROCKETDYNE R-3871 INVESTIGATION OF ADVANCED INJECTOR CONCEPTS FOR THE PENTABORANE/HYDRAZINE PROPELLANT SYSTEM, BY C. K. NAGAI. NOVEMBER 1962. 92 P. NORTH AMERICAN AVIATION. ROCKETDYNE RTC-TDR-63-5

C0062481

UC057768

UC060581

S0063162

S0065569

S0066494
COMMANDER OPERATIONAL TEST AND EVALUATION FORCE O/S45 FY61, FINAL EVALUATE FOR SERVICE USE THE RADIO RECEIVING SET AN/BRR-4(XN-1)(U). 1 JUNE 1962. 22 P.

C0067162
FLEET COMPUTER PROGRAMMING CENTER, PACIFIC U-2769, VOLUME II NAVAL TACTICAL DATA SYSTEM SERVICE TEST SYSTEM. EQUIPMENT DESCRIPTION. 22 MAY 1962. V. P. SPERRY RAND UNIVAC U-2769, VOLUME II

C0070279
FREDERICK RESEARCH CORPORATION FRC REPORT 55-5 INTERFERENCE SURVEY REPORT 746TH A. C. AND W. (P-86) SITE, OKLAHOMA CITY, OKLAHOMA SUPPRESSION SITE. 15 DECEMBER 1955. 35 P.

S0073182
COMMANDER OPERATIONAL TEST AND EVALUATION FORCE. F/C98 FY62, FINAL REPORT. FLEET OPERATIONAL INVESTIGATION OF THE BLADES I COMMUNICATIONS TERMINAL IN NORMAL AND ANTI-JAM MODES (U). 5 MAY 1963. V.P.

U0057928

U0063181
LINCOLN LABORATORY TR 251 THE DICON SYSTEM, BY R. W. BERG AND OTHERS. 31 OCTOBER 1961. 27 P.

U0064511
COMMANDER OPERATIONAL TEST AND EVALUATION FORCE F/051 FY61, FINAL FLEET OPERATIONAL INVESTIGATION OF THE STODDART MODEL 289-1 SUBMINIATURE VLF RADIO RECEIVER. 3 FEBRUARY 1962. V. P.

S0066494
COMMANDER OPERATIONAL TEST AND EVALUATION FORCE O/S45 FY61, FINAL EVALUATE FOR SERVICE USE THE RADIO RECEIVING SET AN/BRR-4(XN-1)(U). 1 JUNE 1962. 22 P.

U0069789
LINCOLN LABORATORY TR 275 RF COMPONENT DEVELOPMENT FOR THE DICON SYSTEM, BY R. S. BERG AND B. HOWLAND. 3 AUGUST 1962. 31 P.

U0072107
NATIONAL BUREAU OF STANDARDS. TN 167. THE ERROR RATES IN MULTIPLE FSK SYSTEMS AND THE SIGNAL-TO-NOISE CHARACTERISTICS OF FM AND FCM-FS SYSTEMS, BY HIROSHI AKIMA. 25 MARCH 1963. 55 P.

TAPES GENERATED THIS RUN

ENG 01 005700504/16/64

DOC 01 005700504/16/64

ADDED ENGLISH DOCUMENTS

S0057005	C0075157	C0076141	C0076142	C0076143
S0076146	S0076147	S0076148	S0076149	C0076152
C0076154	C0076155	C0076156		

DELETED ENGLISH DOCUMENTS

C0067175	U0070210	C0070221	U0064640	U0067087
U0072820	S0073239	U0074914	C0070319	U0072091

ADDITIONS TO DOC TAPE

S0057005	S0074861	C0074865	C0074866	C0074867
C0074868	U0074871	U0074873	U0074874	U0074875
U0074876	U0074877	U0074878	U0074879	U0074880

DELETED CODED DOCUMENTS

APPENDIX 6

Error Messages

I. SEARCH Program

A. On the typewriter

1. MODE - Means paper tape reader is not in the character mode.

2. 50 REQST - Maximum no. of requests read in; they will be processed and then the computer will read in the rest of the requests and process them.

3. TOO MANY - Next tape no. is 100 which is too large. Nothing can be done.

4. TAPE 2 - Error in reading DOC input tape 2, Ch. 3. Press start to retry reading it.

5. TAPE 7 - Error in reading ENG input tp. 3, Ch. 5-6. Press start to retry.

6. TAPE 8 - Error in writing on output tape 4, Ch. 5-6. The program continues without halting.

B. Printed on output tape

The following message is printed

ERROR XXXXXXXX, REQUEST DELETED

where XXXXXXXX can be any of the following words.

1. NOT EVEN - The input request is not a multiple of 8 char. and will be ignored.

2. 1 WORD - One word request, ignored.

3. UNLISTED - Illegal character on input paper tape.

4. TOOLONG - Input request more than 120 characters.

II. Update program

A. Typewriter

1. MODE - Paper tape reader is not in the character mode.

2. FULL - One of the 3 input areas (DOC additions, ENG additions or deletions) is full i. e. contains 250. They will now be processed.

3. WRONG TP - Wrong input tape mounted, mount the one requested by the typewriter message.

4. TOO MANY - Input tape #100 required, too much for program to handle.

5. TAPE 2 - Error in reading DOC input tape, unit 2, Ch. 3-4. Press start to try again.

6. TAPE 3 - Error in writing ENG output tape, unit 3, Ch. 3-4. Press start to try again.

7. TAPE 6 - Error in writing DOC output tape, unit 2, Ch. 5-6. Press start to retry.

8. TAPE 7 - Error in reading ENG input tape, unit 3, Ch. 5-6. Press start to retry.

9. TAPE 8 - Error in writing on output tape, unit 4, Ch. 5-6.

B. Printed on output tape.

The following message will be printed

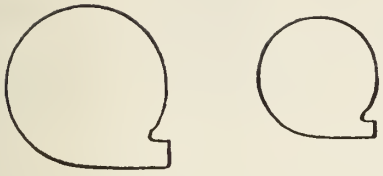
XXXXXXXX, UPDATE REQUEST DELETED

where XXXXXXXX can be any of the following.

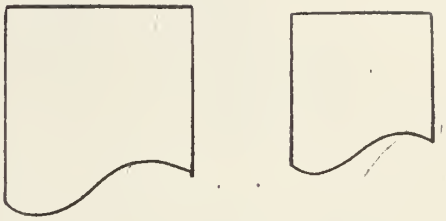
1. E. INPUT - Can't decipher accession number of bibliography paper tape input so record ignored.
2. FORMAT - Bibliography, deletes or DOC addition incorrect, it will be skipped.
3. TOO BIG - English (bibliography) input too long.
4. TOOLONG - DOC input record too long.
5. UNLISTED - Illegal character in paper tape input.
6. NOTEVEN - DOC or delete paper tape input is not the correct length. i. e. is not a multiple of 8 characters.

APPENDIX 7

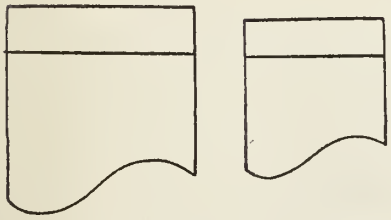
Flow Chart Symbols Used In Documentation



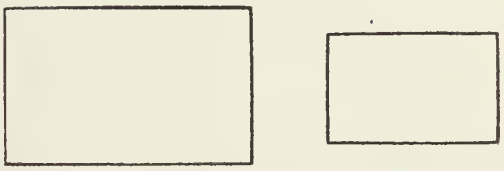
magnetic tape I/O



printer output



typewriter I/O

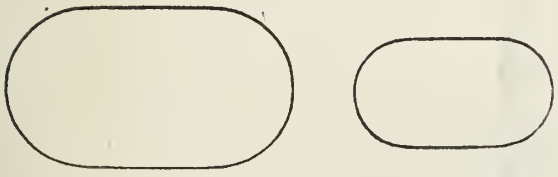


program processing

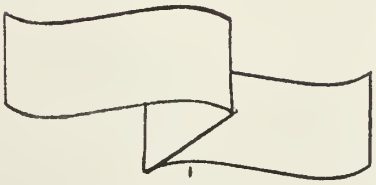
program decision

program start & stop

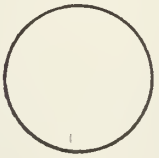
connector identification



subroutine explanation used in calling program



paper tape I/O



subroutine return

APPENDIX 8

1401 Program Brief

CLASS: A8 IBM NO: None

NAME: PRTENG01 SOURCE: USNPGS

DATE: 7 Jan 1964 C. Haworth

1. USAGE:

To print ENG tapes generated by the USNPGS Library's SABIR2 system.

2. FEATURES:

Prints the binary tape as if it were BCD inserting BCD blanks where necessary. First record of input tape is assumed to be BCD label. For more information on the format of the tape printed see Appendix 3 of the SABIR2 system's documentation.

3. OPERATING INSTRUCTIONS:

a. Place ENG tape on unit 1, low density.

b. Ready printer with 11 inch paper.

c. Place the program object deck in the card read hopper.

d. Reset 1401, press card load.

e. After printing to an EOF the program will halt with 0782 in the I address register.

f. To print another file on the same tape press start.

4. ERROR STOPS:

I REG	REASON
0738	Tape label (first record on tape) is in error. Rewind tape and press start to try again.
0759	Tape label error. Press start to try again.

0879 Tape read error. Rewind tape and press start to retry.

5. DOCUMENTATION:

a. Write-up (this brief is the write-up)

b. Flowchart

c. Program listing

d. Source deck

e. Object decks (One-for-One and Condensed).

Gaylord
SHELF BINDER
Syracuse, N. Y.
Stockton, Calif.

9 MAR 65
18 JUN 65
4 JUL 70
9 FEB 71

15061
13707
S 9281
S10548

Folio
TA7
.U6
no.44
v.1

74710

Haworth
Documentation of
SABIR 2.

9 MAR 65
18 JUN 65
4 JUL 70
9 FEB 71

15061
13707
S 9281
S10548

TA7
.U6
no.44
v.1

74710

Haworth
Documentation of
SABIR 2.

folTA 7.U6 no.44v.1
Documentation of SABIR 2.
3 2768 001 86337 6
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